APPENDIX B

Boring Logs

GEOLOGIC BORING LOG

Project: Army Barracks Area **LEA Comm No:** 68TR648 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 8/9/96 **End Date** 8/9/96	**Boring ID** **NA-SB-01**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1016749	100		9": Dark brown, fine SAND, some medium Sand, little Silt, moist, loose, root fragments; 14": Light olive brown, fine SAND, with Silt, moist, slightly stiff	0.0
	1016750	100		As above	0.1
4	1016751	100		Light reddish grey, fine SAND, little medium Sand, trace(-) Silt, very moist, loose; wet ≈ 5.0'	0.1
	1016752	100		Dark olive brown, medium SAND and coarse SAND, some fine trace(+) fine Gravel, trace(-) Silt, wet, loose, dark 4" band ≈ 7.5' (as above)	0.0
8	1016753	100		Dark yellowish brown, fine to medium SAND, some coarse trace Silt, wet, loose	0.0
	1016754	100		Light reddish yellow, fine SAND, with medium Sand, little coarse Sand, trace Silt, wet, loose	0.0
12	1016755	50		As above	0.0
	1016756	50		As above	0.0
16				Bottom of boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/23/1998

Boring No: NA-SB-01

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Army Barracks Area **LEA Comm No:** 68TR648 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 8/9/96 **End Date** 8/9/96	**Boring ID** **NA-SB-02**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro core
Groundwater Observations:
Depth: NM **At:** **Hours** ▽
Depth: **At:** **Hours** ▼

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1016757	100		6": Dark brown, fine SAND, with Silt, some medium Sand, slightly moist, loose, root fragments; 17": Brown, fine SAND, little Silt, trace medium Sand, moist, loose	0.0
	1016758	100		19": Yellowish brown, fine SAND, trace medium Sand, trace(-) Silt, moist, loose; 4": Fine Gravel layer	0.0
4	1016759	100		4": Yellowish brown, fine SAND, trace medium Sand, trace(-) Silt, moist, loose; 19": Dark brown, fine SAND, with Silt, little medium Sand, trace coarse Sand, wet ≈ 5.0'	0.0
	1016760 1016761	100		10": Olive brown, fine to medium SAND, little Silt, wet, loose; 13": Dark red/black, fine to medium SAND, some coarse Sand, trace Silt, wet, loose	0.0
8	1016762	50		Dark yellowish red, fine to medium SAND, little Silt, trace coarse Sand, wet, loose	0.0
	1016763	50		17": Yellow, medium to coarse SAND, little fine Sand, trace Silt, loose, wet; 6": Grey, medium to coarse SAND, little fine Sand, trace Silt, loose, wet	0.0
12	1016764	25		Grey, varved CLAY, trace Silt	0.0
	1016765	25		As above	0.0
16				Bottom of boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/26/1998

Boring No: NA-SB-02

LEA
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GEOLOGIC BORING LOG

Project: Army Barracks Area **LEA Comm No:** 68TR648 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 8/9/96 **End Date** 8/9/96	**Boring ID** **NA-SB-03**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1016767	100		6": Dark brown, fine SAND, with Silt, some medium Sand, slightly moist, loose, root fragments; 17": Brown, fine SAND, little Silt, trace medium Sand, moist, loose	0.0
	1016768	100		20": Yellowish brown, fine SAND, trace medium Sand, trace(-) Silt, moist, loose; 3": Gravel layer	0.0
4	1016769	100		6": As above; 17": Dark brown, fine SAND, with Silt, little medium Sand, trace coarse Sand, wet ≈ 5.0'	0.0
	1016770	100		10": Olive brown, fine to medium SAND, little Silt, wet, loose; 13": Dark reddish black, fine to medium SAND, trace Silt, wet, loose	0.0
8	1016771			Dark yellowish red, fine to medium SAND, trace coarse Sand, wet, loose	0.0
	1016772	100		17": Yellow, medium to coarse SAND, little fine Sand, trace Silt, loose, wet; 6": Grey, medium to coarse Sand, little fine SAND, wet, loose	0.0
12	1016773			Grey, varved CLAY, trace Silt, wet, stiff	0.0
	1016774			As above	0.0
16				Bottom of boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/26/1998

Boring No: NA-SB-03

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100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/21/96 **End Date** 10/21/96	**Boring ID** **NA-SB-04**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020281	100		Dark brown, fine SAND, little Silt, trace medium Sand, moist, loose	0
	1020282	100		Black, fine SAND, some Silt, little medium Sand, moist, loose	2.0
4	1020283 1020284	100		12": As Above; 11": Dark grey, fine to medium SAND, little coarse Sand, trace Silt, wet, loose	3.5
	1020285	100		As Above, HC odor	1.0
8	1020286	50		As Above, no odor apparent	0
	1020287	50		As Above	0
12	1020288	50		Grey, fine SAND, little medium Sand, trace Silt, wet, loose	0
	1020289	50		As Above	0
16				Bottom of Boring at 15'*	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion. * Olive grey, varved, clay at 15.0'.

Printed On: 1/22/1998

Boring No: NA-SB-04

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/21/96 **End Date** 10/21/96	**Boring ID** **NA-SB-05**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020290	100		Brown, fine SAND, some Silt, trace medium Sand, moist, loose	0
	1020291	100		12": As Above; 1": Clay piping; 5": Black, fine SAND and SILT, moist, loose; 5": Brown, fine SAND, some Silt, trace medium Sand, wet, loose	0
4	1020292	100		2": As Above; 22": Grey, fine to medium SAND, with coarse Sand, little fine Gravel, trace Silt, wet, loose, sewage odor	0
	1020293	100		12": As Above; 12": Grey, fine SAND, little Silt, trace medium Sand, wet, loose, sewage odor	0
8	1020294	100		Grey, fine to medium SAND, some coarse Sand, little Silt, wet, loose	0.5
	1020295	100		As Above	0
12	1020296	100		As Above	0
	1020297	100		As Above	0
16				Bottom of Boring at 15'*	
20					
24					

Comments: Borehole backfilled with bentonite chips. * Olive grey, varved clay, trace Silt, wet, stiff at 15.0'.

Printed On: 1/22/1998

Boring No: NA-SB-05

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/22/96 **End Date** 10/22/96	**Boring ID** **NA-SB-06**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020300	100		Brown, fine SAND and SILT, moist, slightly stiff, root fragments	20.0
	1020301	100		8": As Above; 14": Dark brown, medium SAND, some fine Sand, little coarse Sand, very moist, loose, strong hydrocarbon odor; 1": Black lense, fine SAND, with Silt,	840.0
4	1020302	100		some medium Sand, moist, loose, strong hydrocarbon odor; 1": Dark brown, medium SAND, some fine Sand, little coarse Sand, wet, loose, strong hydrocarbon odor	1000+
	1020303	100		Strong brown, fine to medium SAND, little Silt, trace coarse Sand, wet, loose	42.0
8				6": As Above; 18": Dark grey, fine SAND, with medium Sand, little Silt, trace coarse Sand, wet, loose	
	1020304	100		6": As Above; 18": Olive brown, fine to medium SAND, little coarse Sand, trace Silt, wet, loose	9.0
	1020305	100		Greyish brown, fine to medium SAND with coarse Sand, little fine Gravel, trace(-) Silt, wet, loose	1.3
12	1020306	100		As Above	4.6
	1020307	100		As Above	0.0
16				Bottom of boring at 15.0' *	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.
*Olive grey, CLAY, trace Silt, wet, stiff at 15.5'.

Printed On: 1/22/1998

Boring No: NA-SB-06

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/22/96 **End Date** 10/22/96	**Boring ID** **NA-SB-07**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020308	50		Dark brown, fine SAND and SILT, trace(+) medium Sand, trace(-) fine Gravel, moist, slightly stiff	0.0
	1020309	50		8": As Above; 4": Brown, medium SAND, some fine Sand, little coarse Sand, trace(+) Silt, moist, loose	0.0
4	1020310	75		Olive brown, fine SAND, with Silt, wet, slightly stiff	0.1
	1020311	75		As Above	0.4
8	1020312	75		Olive grey, fine SAND, some medium Sand, little Silt, trace(-) coarse Sand, wet, loose	0.0
	1020313	75		Olive brown, fine to medium SAND, some coarse Sand, little Silt, wet, loose	0.1
12	1020314	100		Grey, medium to coarse SAND, some fine Sand, trace(+) fine Gravel, trace(-) Silt, wet, very loose	0.0
	1020315	100		As Above	0.0
16				Bottom of Boring at 15' *	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.
*Olive grey, varved Clay, trace Silt, wet, stiff at 15.0'

Printed On: 1/22/1998

Boring No: NA-SB-07

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/22/96 **End Date** 10/22/96	**Boring ID** **NA-SB-08**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020316	100		Dark brown, fine SAND and SILT, moist, loose, root fragments	0.1
	1020317	100		Light brown, fine SAND, little Silt, moist, loose, brick fragments at 3.5'	0.0
4	1020318	25		Olive brown, medium SAND, some fine Sand, little coarse Sand, trace Silt, wet, loose	2.1
	1020319 1020320	25		5": As Above; 1": Black, medium SAND, some fine Sand, little coarse Sand, trace Silt, wet, loose	1.0
8	1020321	100		As Above	2.3
	1020322	100		Grey, fine to medium SAND, some coarse Sand, little fine Gravel, trace Silt, wet, loose	0.0
12	1020323	100		As Above	0.0
	1020324	100		As Above	0.0
16				Bottom of Boring at 15'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/22/1998

Boring No: NA-SB-08

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/23/96 **End Date** 10/23/96	**Boring ID** **NA-SB-09**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020327	100		Dark brown, fine SAND, with Silt, moist, loose, root and brick fragments	0.4
	1020328	100		12": As above; 6": Concrete/conglomerate layer; 5": Yellowish red, medium SAND, with fine Sand, little Silt, trace coarse Sand, moist, loose	0.8
4	1020329 1020330	100		8": Yellowish brown, medium SAND, some fine Sand, little Silt, trace coarse Sand, wet, loose; 15": Dark brown, medium SAND, some fine Sand, little coarse Sand, trace(+) Silt, trace(-) fine Gravel, wet, loose	0.3
	1020331	100		10": As above; 13": Dark yellowish brown, fine SAND, with medium Sand, little Silt, trace coarse Sand, wet, loose	0.4
8	1020332	100		As above	0.1
	1020333	100		4": As above; 19": Dark olive grey, medium SAND and coarse SAND, some fine Sand, little fine Gravel, trace(-) Silt, wet, loose	0.6
12	1020334	100		Dark grey, medium SAND and fine SAND, trace(+) coarse Sand, trace(-) Silt, wet, loose	0.8
	1020335	100		As above	1.7
16				Bottom of boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/22/1998

Boring No: NA-SB-09

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/23/96 **End Date** 10/23/96	**Boring ID** **NA-SB-10**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020336	100		Dark brown, fine SAND, with Silt, moist, loose, root fragments	0.0
	1020337	100		12": As above; 11": Brown, fine to medium SAND, little Silt, moist, loose	0.0
4	1020338	100		Brown, fine to medium SAND, little Silt, trace fine Gravel, wet, loose	0.0
	1020339	100		Olive grey, fine SAND, trace Silt, wet, loose	0.0
8	1020340	100		As above	0.0
	1020341	100		Olive grey, fine to medium SAND, some coarse Sand, little Silt, wet, loose	0.2
12				No Recovery	
				No Recovery	
				Bottom of boring at 15.0'	
16					
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.
No recovery from 12-15'

Printed On: 1/22/1998

Boring No: NA-SB-10

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/23/96 **End Date** 10/23/96	**Boring ID** **NA-SB-11**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours** ▽
Depth: **At:** **Hours** ▼

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020344	100		Dark brown, fine SAND and SILT, trace medium Sand, moist, loose, root fragments	0.0
	1020345	100		20": As above; 3": Concrete layer	0.0
4	1020346	100		Dark brown, fine SAND, some Silt, little medium Sand, moist, loose	0.0
	1020347	100		Dark yellowish brown, medium SAND, some fine Sand, little coarse Sand, trace Silt, wet, loose	0.2
8	1020348	100		Grey, fine SAND, little medium Sand, trace(-) Silt, wet, loose	0.4
	1020349	100		Grey, medium SAND, some fine Sand, little coarse Sand, trace(+) fine Gravel, trace(-) Silt, wet, loose	0.2
12	1020350	10		Grey, medium to coarse Sand, little fine Sand, trace fine Gravel, wet, very loose	0.0
	1020351	10		As above	0.0
16				Bottom of boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/22/1998

Boring No: NA-SB-11

LEA
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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/24/96 **End Date** 10/24/96	**Boring ID** **NA-SB-12**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020354	100		20": Brown, fine to medium SAND, some Silt, moist, loose, root fragments, rubble; 3": Dark yellowish brown, fine to medium SAND, little coarse Sand, trace silt, moist, loose	0.0
	1020355	100		As above	0.0
4	1020356 1020357	100		Greyish brown, fine SAND, some Silt, little medium Sand, trace coarse Sand, wet, loose	3.9
	1020358	100		As above	0.1
8	1020359	100		Dark greenish grey, fine SAND, some Silt, little medium Sand, wet, loose	0.1
	1020360	100		12": Grey fine SAND, some Silt, trace medium Sand, wet, loose; 11": Grey, medium SAND, with coarse Sand, some fine Sand, trace Silt, wet, very loose	0.2
12	1020361	20		1": As above; 4": Olive grey, varved CLAY, little Silt, wet, stiff	0.0
	1020362	20		As above	0.0
16				Bottom of boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/22/1998

Boring No: NA-SB-12

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/24/96 **End Date** 10/24/96	**Boring ID** **NA-SB-13**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020363	100		Strong brown, fine SAND, some Silt, trace medium Sand, moist, loose, root fragments	0.0
	1020364	100		6": As above; 17": Dark brown, fine SAND and SILT, trace medium Sand, moist, loose	0.0
4	1020365	100		Brown, fine to medium SAND, little coarse Sand, trace(+) Silt, wet, loose	0.1
	1020366	100		Olive brown, fine SAND, some Silt, little medium Sand, trace coarse Sand, wet, loose	0.1
8	1020367	100		10": As above; 13": Olive brown, fine to medium SAND, some coarse Sand, little Silt, wet, loose	0.0
	1020368	100		Olive brown, fine SAND, with medium Sand, some coarse Sand, little fine Gravel, trace Silt, wet, loose	0.0
12	1020369	25		Olive grey, varved CLAY, trace Silt, wet, stiff	0.0
	1020370	25		4": As above; 2": Grey, fine SAND and SILT, wet, loose	0.3
16				Bottom of boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/22/1998

Boring No: NA-SB-13

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/24/96 **End Date** 10/24/96	**Boring ID** **NA-SB-14**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours** ▽
Depth: **At:** **Hours** ▼

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020371	100		Dark brown, fine SAND and SILT, trace medium Sand, moist, loose, root fragments	0.0
	1020372	100		Dark brown, fine SAND and SILT, trace medium Sand, moist, loose	0.0
4	1020373	100		Strong brown, fine SAND and SILT, little medium Sand, wet at ≈ 6.0', loose	0.4
	1020374	100		Strong brown, fine to medium SAND, some Silt, little coarse Sand, wet, loose	0.1
8	1020375	100		Grey, fine SAND, with medium Sand, some coarse Sand, little fine Gravel, trace Silt, wet, loose	0.1
	1020376	100		As above	0.0
12	1020377	10		1": Grey, fine SAND and SILT, wet, loose; 1.5": Olive grey, varved CLAY, trace Silt, wet, stiff	0.0
	1020378	10		1.5": As above; 1": Grey, fine SAND and SILT, wet, loose	0.0
16				Bottom of boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/22/1998

Boring No: NA-SB-14

LEA
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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/28/96 **End Date** 10/28/96	**Boring ID** **NA-SB-15**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020381	100		Dark brown, fine SAND with Silt, little medium Sand, moist, slightly stiff, root fragments	0.0
	1020382	100		2": As Above; 21": Strong brown, fine SAND, some medium Sand, little Silt, moist, loose	0.2
4	1020383	100		4": As Above; 8": Brown, fine SAND and SILT, trace medium Sand, wet, slightly stiff; 11": Dark reddish brown, fine to medium SAND, some coarse Sand, little Silt, trace fine Gravel, wet, loose	0.4
	1020384	100		As Above	0.0
8	1020385 1020386	50		Brown, fine to medium SAND, some coarse Sand, little fine Gravel, trace Silt, wet, loose	0.7
	1020387	50		As Above	0.3
12	1020388	100		15": Grey, fine SAND, little medium Sand, trace(+) Silt, wet, loose; 8": Olive grey, varved CLAY, trace Silt, wet, stiff	0.3
	1020389	100		As Above	0.0
16				Bottom of Boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/22/1998

Boring No: NA-SB-15

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/28/96 **End Date** 10/28/96	**Boring ID** **NA-SB-16**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020390	100		10": Dark brown, fine SAND, with Silt, trace medium Sand, moist, slightly stiff, root fragments; 13": Strong brown, fine SAND, some Silt, little medium Sand, moist, loose	0.0
	1020391	100		As Above	0.0
4	1020392	100		18": Dark reddish brown, fine to medium SAND, some coarse Sand, little fine Gravel, trace(-) Silt, wet, loose; 5": Brown, fine to medium SAND, little Silt, wet, loose	0.4
	1020393	100		As Above	1.5
8	1020394	100		As Above	1.6
	1020395	100		19": As Above; 4": Grey, fine to medium SAND, little Silt, wet, loose	0.3
12	1020396	100		5": As Above; 18": Olive grey, varved CLAY, trace Silt, wet, stiff	1.3
	1020397	100		As Above	22.0
16				Bottom of Boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/22/1998

Boring No: NA-SB-16

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/28/96 **End Date** 10/28/96	**Boring ID** **NA-SB-17**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020398	100		4": Dark brown, fine SAND and SILT, moist, slightly stiff, root fragments; 1": Concrete; 18": Dark reddish brown, fine to medium SAND, little Silt, moist, loose	0.0
	1020399	100		Strong brown, fine to medium SAND, some Silt, little coarse Sand, trace fine Gravel, wet, loose	0.0
4	1020400	100		12": As Above; 11": Strong brown, fine SAND, some Silt, little medium Sand, wet, loose	0.2
	1020401	100		Brown, fine SAND, with medium Sand, little Silt, trace coarse Sand, wet, loose	0.1
8	1020402	100		Grey, fine SAND, little medium Sand, trace Silt, wet, loose	0.0
	1020403	100		Grey, fine to medium SAND, some coarse Sand, little Silt, trace fine Gravel, wet, loose	0.0
12	1020404	50		Olive grey, varved CLAY, trace Silt, wet, stiff	0.0
	1020405	50		As Above	0.0
16				Bottom of Boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/22/1998

Boring No: NA-SB-17

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. **LEA Comm No:** 68TR617 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/29/96 **End Date** 10/29/96	**Boring ID** **NA-SB-18**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours** ▽
Depth: **At:** **Hours** ▼

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020406	100		Dark red, fine SAND and SILT, little medium Sand, moist, loose, root fragments	0.0
	1020407	100		Dark red, fine SAND, some medium Sand, little Silt, trace coarse Sand, moist, loose	0.1
4	1020408 1020409	100		Reddish brown, fine to medium SAND, little Silt, wet, loose	0.7
	1020410	100		Strong brown, fine SAND, with medium Sand, little coarse Sand, trace(+) Silt, trace(-) fine Gravel, wet, loose	0.1
8	1020411	50		Strong brown, fine SAND, little Silt, wet, loose	0.0
	1020412	50		Strong brown, medium SAND, with fine Sand, some coarse Sand, little fine Gravel, trace Silt, wet, loose	0.0
12	1020413	25		12": As Above; 11": Olive brown, fine SAND, some medium Sand, little coarse Sand, trace Silt, wet, loose	0.0
	1020414	25		As Above	0.0
16				Bottom of Boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/22/1998

Boring No: NA-SB-18

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/11/97 **End Date** 2/11/97	**Boring ID** **NA-SB-19**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026253	83		10": Topsoil, dark brown, rooted; 12": Dark brown, fine(+) to coarse SAND, trace(-) fine Gravel, some Silt, loose, occasional coal and brick fragments; 8": Dark brown, SILT and fine SAND, moist, slightly dense; 10": Dark yellow brown, fine to medium SAND, little Silt, moist, loose, occasional brick fragments	0.1
	1026254				0.1
4	1026255	75		Grey brown, fine to coarse SAND, little fine Gravel, moist to wet, slightly dense, subangular Gravel, occasional coarse Sand, fine Gravel lenses, very slight petrol odor	0.2
	1026256				0.3
8	1026257	58		Grey brown, fine to coarse (+) SAND, little fine Gravel, wet, slightly dense, angular to subrounded gravel, slight coarsening downward, slight petrol odor	0.4
	1026258				0.4
12		0		No Recovery	
16				Bottom of borings at 15'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-19

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/11/97 **End Date** 2/11/97	**Boring ID** **NA-SB-20**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026259	100		10": Dark brown topsoil; 4": Dark yellowish brown, fine(+) to medium SAND, with Silt, trace coarse Sand, trace fine Gravel, slightly moist, loose to slightly dense; 12": Dark brown, SILT and fine SAND, slightly moist, slightly dense; 12": Dark brown, SILT and SAND, slightly moist, slightly dense; 12": Dark yellowish brown, fine(+) to coarse SAND, trace(-) fine Gravel, some Silt, moist, slightly dense	0.8
	1026260 1026261				0.5
4	1026262	67		Grey brown, fine to very coarse SAND, trace fine Gravel, trace Silt, wet, slightly dense, strong petrol odor near tip, slight staining	0.5
	1026263				1.5
8	1026264	46		Grey brown, fine to very coarse(+) SAND, with fine Gravel, wet, loose, slight petrol odor, subrounded Gravel	1.0
	1026265				1.0
12	1026266	54		23": Grey brown to dark yellow brown, medium to very coarse(+) SAND, with fine Gravel, wet, slightly dense, subangular to subrounded Gravel; 3": Grey brown, fine SAND, wet, slightly dense, trace medium to coarse Sand	1.0
	1026267				0.9
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-20

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/11/97 **End Date** 2/11/97	**Boring ID** **NA-SB-21**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours** ▽
Depth: **At:** **Hours** ▼

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026268	83		10": Dark brown, Topsoil; 14": Dark yellowish brown, fine(+) to medium SAND and SILT, trace fine Gravel, slightly moist, slightly dense, coal fragments; 16": Dark brown, fine(+) to medium SAND, with Silt, trace fine to medium Gravel, moist, loose to slightly dense, concrete fragments	0.3
	1026269				0.4
4	1026270	88		12": Dark yellow brown, fine to coarse SAND, with Silt, wet, slightly dense, 1" Silt lense at top; 28": Grey brown, fine to very coarse SAND, trace Silt, trace fine Gravel, wet, loose, petrol odor and staining at base; 2": Grey brown, fine GRAVEL, some coarse Sand, wet, loose, petrol odor, subangular	0.7
	1026271				1.2
8		0		No recovery	
12	1026272	100		40": Grey brown, medium to very coarse(+) SAND, with fine Gravel, wet, slightly dense to loose, angular to subrounded; 8": Olive grey, CLAY and SILT, trace(-) very fine Sand, moist, dense, laminated	0.3
	1026273				0.2
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-21

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/12/97 **End Date** 2/12/97	**Boring ID** **NA-SB-22**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026275	67		8": Dark brown, Topsoil-frozen, rooted; 24": Dark yellowish brown, fine to coarse SAND, some fine Gravel, little Silt, moist to wet, occasional brick fragments, occasional charcoal fragment	1.0
	1026276				22
4	1026277	75		12": As above, wet; 4": Black, SILT, moist to wet, slightly dense, strong petroleum odor; 20": Grey, fine to coarse(+) SAND, with fine Gravel, wet, slightly dense to loose, very strong petrol odor, slightly coarser at tip	>1000
	1026278 1026279				120
8	1026280	69		Grey, fine to coarse(+) SAND, with fine Gravel, wet, loose to slightly dense, strong petrol odor, coarsening downward to grey, fine GRAVEL, with coarse Sand, wet, loose, strong petrol odor, subrounded to subangular	22
	1026281				10
12	1026282	48		Grey brown, fine to coarse(+) SAND, with fine Gravel, loose to slightly dense, wet, very slight petrol odor	0.1
	1026283				0.1
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-22

LEA
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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/12/97 **End Date** 2/12/97	**Boring ID** **NA-SB-23**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026284	54		10": Dark brown, Topsoil-frozen, rooted; 16": Dark yellowish brown, fine to coarse SAND, trace fine Gravel, slightly moist to moist, loose	0.2
	1026285				0.2
4	1026286	83		2": As above; 14": Black, SILT, little fine Sand, dense, moist, occasional fibrous organic matter; 24": Grey, fine to coarse SAND, little fine Gravel, wet, loose to slightly dense, petroleum odor, occasional fibrous organic matter, occasional brick fragments	0.1
	1026287				1.5
8	1026288	71		Grey, fine to coarse(+) SAND, with fine Gravel, wet, loose, petroleum odor, slight coarsening downward	1.0
	1026289				0.3
12	1026290	75		30": Grey, fine to coarse SAND, little fine Gravel, wet, slightly dense, fining downward; 3": Grey, CLAY, with Silt, trace fine Sand, moist to wet, dense, laminated; 3": Grey, fine SAND, wet, slightly dense	0.2
	1026291				0.1
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-23

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/12/97 **End Date** 2/12/97	**Boring ID** **NA-SB-24**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026292	88		8": Topsoil, rooted, frozen, dark brown; 8": Dark brown, fine SAND, trace fine Gravel, some Silt, 1" coal/charcoal lense, slightly moist, slightly dense; 10": Dark yellow brown, fine to medium SAND, with Silt, slightly moist, slightly dense; 16": Dark brown, fine(+) to medium SAND, with Silt, moist, slightly dense, trace fine Gravel	0.0
	1026293				0.5
4	1026294	75		28": Yellow brown to strong brown, fine to coarse(+) SAND, little fine Gravel, wet, loose, coarsening down; 8": Grey, brown, fine to coarse SAND, with fine Gravel, wet, loose, 1" fine SAND lens at base	0.1
	1026295				0.3
8	1026296	71		Grey brown, fine to coarse(+) SAND, little fine Gravel, wet, loose, coarsening downward	0.1
	1026297				0.1
12	1026298	100		46": Grey brown, fine to coarse(+) SAND and fine GRAVEL, wet, loose, subangular to subrounded Gravel; 2": Grey, CLAY, with Silt, trace fine Sand, moist to wet, dense, laminated	0.0
	1026299				0.1
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/22/1998

Boring No: NA-SB-24

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/12/97 **End Date** 2/12/97	**Boring ID** **NA-SB-25**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026300 1026301	100		12": Topsoil-frozen, rooted; 20": Dark brown, fine to medium SAND, trace fine Gravel, moist, loose, coal/charcoal fragments near top; 8": Black, SILT, moist, dense; 8": Strong brown, medium to coarse SAND, moist, loose	
4	1026302 1026303	81		4": As above; 10": Black, SILT, wet, dense, strong petrol odor; 25": Grey, fine to coarse(+) SAND, with fine Gravel, wet, loose, petroleum odor	
8	1026304 1026305	81		Grey, fine to coarse(+) SAND, little fine Gravel, trace(-) Silt, wet, loose, subrounded Gravel, occasional Gravel lense (fine Gravel)	
12	1026306 1026307	83		32": As above; 8": Grey, CLAY, some Silt, trace(-) fine Sand, wet, dense, laminated	
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-25

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/13/97 **End Date** 2/13/97	**Boring ID** **NA-SB-26**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026309 1026310	67		10": Topsoil; 14": Dark brown, fine SAND and SILT, with fine to coarse Gravel, moist, loose, subangular Gravel; Refusal @ 3' - moved 2' west	
4	1026311 1026312 1026313	83		6": Strong brown, fine to coarse SAND, wet, loose, trace(-) fine Gravel, trace Silt; 34": Grey, fine to coarse SAND, trace fine Gravel, wet, loose, coarsening downward, occasional fine SAND lenses	
8	1026314 1026315	58		Grey, medium to coarse(+) SAND and fine GRAVEL, wet, loose, subrounded Gravel, slightly coarser at tip	
12	1026316 1026317	38		Grey, coarse SAND and fine GRAVEL, wet, loose	
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-26

LEA
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100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/13/97 **End Date** 2/13/97	**Boring ID** **NA-SB-27**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026318	89		10" Topsoil, dark brown, with occasional brick and charcoal fragments; 14": Dark brown to dark yellow brown, fine SAND and SILT, with fine to coarse Gravel, moist, slightly dense, occasional brick and concrete fragments, concrete wedged in tip	
4	1026319 1026320	71		12": Yellow brown, fine SAND, trace Silt, wet, slightly dense, coarsening to coarse Sand, trace fine Gravel, wet, slightly dense; 20": Grey, fine to coarse SAND, wet, slightly dense; 2": Grey, fine SAND, wet, slightly dense	
8	1026321 1026322	75		Grey, medium to coarse(+) SAND and fine GRAVEL, wet, loose, subrounded	
12	1026323 1026324	100		14": As above; 30": Grey, fine to coarse SAND, little fine Gravel, wet, slightly dense; 4": Grey, CLAY, trace Silt, trace fine Sand, wet, dense	
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-27

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/13/97 **End Date** 2/13/97	**Boring ID** **NA-SB-28**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours** ▽
Depth: **At:** **Hours** ▼

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026325 1026326	79		10": Top soil, dark brown, rooted, frozen; 2": Black, fine to coarse SAND, with fine Gravel, moist, loose, coal fragments and charcoal(?); 26": Strong brown to dark yellowish brown, fine to medium SAND, with Silt, slightly moist to moist, loose, coarse Gravel lense (arkose) near top	
4		0		No Recovery	
8	1026327 1026328	62		Grey, fine to very coarse SAND, with fine Gravel, wet, slightly dense, stratified	
12	1026329 1026330	38		Grey, coarse to very coarse SAND and fine GRAVEL, wet, loose to slightly dense	
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-28

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100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/18/97 **End Date** 2/18/97	**Boring ID** **NA-SB-29**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours** ▽
Depth: **At:** **Hours** ▼

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026332 1026333 1026334	85		12": Dark brown, Topsoil, frozen to 6" ±, rooted; 12": Dark brown, fine SAND, with Silt, trace medium to coarse SAND, trace fine Gravel, slightly moist, loose, coal and charcoal fragments; 10": Dark reddish brown, fine(+) to medium SAND, with Silt, trace coarse Sand, slightly moist, loose; 7": Dark yellow brown, fine to coarse SAND, little fine Gravel, slightly moist, loose	
4	1026335 1026336	88		4": Dark reddish brown, SILT and fine SAND, moist, slightly dense; 34": Dark yellow brown to dark grey brown, fine to coarse(+) SAND, trace Silt, trace fine Gravel, wet, loose; 4": Grey, fine SAND, some Silt, wet, loose	
8	1026337 1026338	67		As above	
12	1026339 1026340	92		42": Dark grey brown, fine to coarse(+) SAND, with fine Gravel, wet, loose to slightly dense, fining downward; 2": Grey, CLAY, trace(-) fine SAND	
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-29

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100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/18/97 **End Date** 2/18/97	**Boring ID** **NA-SB-30**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026341 1026342	67		14": Dark brown, topsoil, rooted, partially frozen, moist; 3": Dark brown, fine SAND and SILT, slightly moist, loose; 3": Grey, coarse GRAVEL, angular, dry, fractured by drilling; 12": Dark brown to dark yellowish brown, coarse GRAVEL and fine SAND, little Silt, moist, loose, angular, brick fragments	
4	1026343 1026344	71		Dark reddish brown to dark yellowish brown (bottom 1/3), fine to coarse(+) SAND, trace Silt, trace fine Gravel, wet, slightly dense, occasional staining (petroleum?), possible mild septic odor	
8	1026345 1026346	79		Dark yellowish brown, fine to coarse SAND, trace fine Gravel, wet, loose, occasional staining, possibly septic in bottom 1/2, occasion coarse Sand, fine Gravel lenses throughout	
12	1026347 1026348	100		43": Grey brown, fine to coarse(+) SAND, some fine Gravel, wet, loose to slightly dense; 4": Grey brown, fine to medium SAND, little fine Sand, trace fine Gravel, wet, slightly dense; 1": Grey, CLAY, trace Silt, trace fine Sand, wet, dense, laminated	
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-30

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100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/18/97 **End Date** 2/18/97	**Boring ID** **NA-SB-31**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Klapheke
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026349 1026350	88		14": Topsoil; 3": Concrete rubble; 27": Dark yellowish brown, fine to medium SAND, some Silt, slightly moist to moist, slightly dense, generally coarsening downward	
4		0		No Recovery	
8	1026351 1026352	65		27": Dark grey brown, fine to coarse SAND, trace fine Gravel, wet, slightly dense; 4": Dark yellowish brown, fine to coarse(+) SAND, little fine Gravel, wet, slightly dense	
12	1026353 1026354	100		Dark grey brown, fine to coarse(+) SAND, with fine Gravel, wet, slightly dense	
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-31

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100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: X-401 Area **LEA Comm No:** 68TR656 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 7/16/96 **End Date** 7/16/96	**Boring ID** **NK-SB-32**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Large Bore
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1016034	100		10": Medium reddish brown, fine SAND and SILT, trace medium Sand, trace(-) coarse Sand, moist, slightly dense; 13": Light grey, fine SAND, trace(+) medium Sand, trace(-) Silt, loose, moist	60.0
	1016035	100		As above; solvent odor	500.0
4	1016036	100		Olive grey, fine to medium SAND, some coarse Sand, little fine Sand, trace fine Gravel, wet, loose	280.0
	1016037	100		8": As above; 15": Dark reddish brown, fine SAND and SILT, little medium Sand, trace(-) coarse Sand, loose, wet	18.0
8	1016038	100		5": As above; 10": Dark grey, fine SAND, little medium Sand, trace Silt, loose, wet; 8": Olive grey, varved CLAY, trace(+) Silt, trace(-) fine Sand, stiff, wet	10.0
	1016039	100		As above	5.1
12	1016040	100		As above	4.7
	1016041	100		As above	4.6
16				Bottom of boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 2/16/1998

Boring No: NK-SB-32

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/19/97 **End Date** 2/19/97	**Boring ID** **NA-SB-33**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: Dave Brisso
Drilling Foreman: Jon Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026366	83		20": Brown, fine SAND, trace(+) very fine Sand, trace organics, moist, moderately dense	0
	1026367	83		20": Orange brown, fine SAND, trace(+) medium Sand, moist, loose	0
4	1026368	75		Top 10": Grey brown, fine SAND, trace(+) medium Sand, moist, loose; Bottom 8": Orange, brown, medium to fine Sand, wet, loose	0
	1026369	75		As above, bottom 8"	0
8	1026370	83		Top 20": Grey, fine SAND, wet, loose	0
	1026371	83		Top 16": As above; Bottom 4": Grey, fine SAND, trace(+) medium Sand, wet, loose	0
12	1026372	90		Grey, medium to fine SAND, trace(-) coarse Sand, wet, loose	0
	1026373	90		As above	0
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-33

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 2/19/97 **End Date** 2/19/97	**Boring ID** **NA-SB-34**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: Dave Brisso
Drilling Foreman: Jon Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026374	83		Top 4": Brown, fine to very fine SAND, trace(-) medium Sand, moist, moderately dense; Middle 6": Orange brown, fine SAND, trace medium Sand, moist, loose; Bottom 10": Grey brown, fine SAND, trace(+) very fine Sand, trace organics, moist, moderately dense	0
	1026375	83		Top 15": As above, bottom 10"; Bottom 5": Brown, medium to fine SAND, trace coarse Sand, (fill material) claypipe and asphalt	0
4	1026376	83		20": Grey, medium to fine SAND, trace(-) coarse Sand, wet, loose	0
	1026377	83		Top 6": As above; Middle 8": Dark grey, medium to fine SAND, wet, organic odor, loose; Bottom 6": Grey, fine to medium SAND, wet, loose	0
8	1026378	62		Top 10": Grey, fine SAND, wet, loose; Bottom 5": Grey, medium to fine SAND, trace(-) coarse Sand, wet, loose	0
	1026379	62		Grey, medium to fine SAND, grading to grey, coarse to fine SAND, wet, loose	0
12	1026380	75		Grey, fine to medium SAND, trace coarse Sand, wet, loose	0
	1026381	75		Top 12": As above; Bottom 6": Grey, CLAY, trace Silt and fine Sand, wet, loose	0
16				Bottom of boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite upon completion.

Printed On: 1/21/1998

Boring No: NA-SB-34

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GEOLOGIC BORING LOG

Project: Silver La. Pickle Add. In **LEA Comm No:** 68V7040 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 02/24/97 **End Date** 02/24/97	**Boring ID** **NA-SB-36**

Drilling Contractor: LEA
Drilling Method: GeoProbe
Sampling Method: Micro Core
Groundwater Observations:
Depth: NRM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: D. Brisson
Drilling Foreman: J. Sweeton
Drill Rig: GP5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026881	62		15": Orange brown, fine SAND, trace organics, moist, loose	0
	1026882	62		Top 10": Brown, fine SAND, trace very fine Sand, moist, moderately dense; Bottom 5": Brown, fine to very fine SAND, trace fill material (asphalt, topsoil, concrete), moist, loose	0
4	1026884 1026883	62 62		Top 6": As Above 5"; Bottom 12": Orange brown, fine SAND, moist, loose	0
	1026885	62		Top 10": Grey brown, fine SAND, moist to wet, loose; Bottom 8": Grey brown, fine to medium SAND, wet, loose	0
8	1026886	83		20": As Above	0
	1026887	83		Top 10": As Above; Bottom 10": Grey, fine SAND, wet, loose	0
12	1026888	62		Top 10": As Above bottom 10"; Bottom 5": Grey, medium to fine SAND, wet, loose	0
	1026889	62		15": As Above bottom 5"	0
16				Bottom of boring 16'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 2/9/1998

Boring No: NA-SB-36

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LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver La. Pickle Add.In **LEA Comm No:** 68V7040 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 02/24/97 **End Date** 02/24/97	**Boring ID** **NA-SB-37**

Drilling Contractor: LEA
Drilling Method: GeoProbe
Sampling Method: Micro Core
Groundwater Observations:
Depth: NRM **At:** **Hours** ▽
Depth: **At:** **Hours** ▼

Logged By: D. Brisson
Drilling Foreman: J. Sweeton
Drill Rig: GP5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026890	62		Top 4": Orange brown, fine SAND, trace organics, moist, loose; Bottom 11": Brown, fine to very fine SAND, trace medium to coarse Sand, trace fill material (asphalt, topsoil), dense	0
	1026891	62		15": As Above Bottom 11"	0
4	1026892	62		Top 8": Red brown, fine SAND, trace medium Sand, moist, loose; Bottom 7": Red brown, fine SAND, trace medium Sand, wet, loose	0
	1026893	62		15": Grey to orange, fine SAND, trace(+) medium Sand, wet, loose	0
8	1026894	100		Top 10": Grey, fine SAND, trace medium Sand, wet, loose; Middle 4": Iron-stained, grey, fine SAND, wet, loose; Bottom 10": Grey, medium to fine SAND, trace coarse sand, wet, loose	0
	1026895	100		Top 14": As above bottom 10"; Bottom 10": Grey, fine SAND, little coarse Sand, wet, loose	0
12	1026896	62		15": Grey, medium to fine SAND, little course Sand, wet, loose	0
	1026897	62		Top 5": As Above; Bottom 10": Olive-grey, fine SAND, wet, loose	0
16					
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 1/26/1998

Boring No: NA-SB-37

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver La. Pickle Add. In **LEA Comm No:** 68V7040 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 02/24/97 **End Date** 02/24/97	**Boring ID** **NA-SB-38**

Drilling Contractor: LEA
Drilling Method: GeoProbe
Sampling Method: Micro Core
Groundwater Observations:
Depth: NRM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: D. Brisson
Drilling Foreman: J. Sweeton
Drill Rig: GP5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026898	62		Top 10": Orange-brown, fine SAND, trace organics, moist, loose; Bottom 5": Brown, fine SAND, trace fill material, loose	0
	1026899	62		15": As Above	0
4	1026900	83		20": Brown, fine SAND, trace fill material (asphalt, concrete, traprock), moderately dense, moist	0
	1026901	83		20": Light brown, fine SAND, moist, loose	0
8	1026902	75		Top 10": Reddish brown, fine to medium SAND, moist, loose; Bottom 8": Reddish brown, fine to medium SAND, wet, loose	0
	1026903	75		18": Alternating bands of grey and iron-stained lenses of fine SAND, wet, loose	0
12	1026904	62		Greenish grey, fine SAND, trace(-) medium Sand, wet, loose	0
	1026905	62		As Above	0
16				Bottom of Boring 16'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 2/2/1998

Boring No: NA-SB-38

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver La. Pickle Add.In **LEA Comm No:** 68V7040 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 02/25/97 **End Date** 02/25/97	**Boring ID** **NA-SB-39**

Drilling Contractor: LEA
Drilling Method: GeoProbe
Sampling Method: Micro Core
Groundwater Observations:
Depth: NRM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: D. Brisson
Drilling Foreman: J. Sweeton
Drill Rig: GP5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026908	62		15": Light brown, fine SAND, trace organics, trace Gravel, loose, moist	0
	1026909	62		15": Light brown, fine SAND, moist to wet, loose	0
4	1026910 1026911	75		Top 10": Grey, fine SAND, trace(+) medium Sand, wet, loose; Bottom 8": Grey, fine SAND, wet, loose	0
	1026912	75		Top 15": Grey, fine to medium SAND, trace coarse Sand, wet, loose; Bottom 3": Grey, fine SAND, wet, loose	0
8	1026913	83		20": Grey, fine to medium SAND, trace(-) coarse Sand, wet, loose	0
	1026914	83		20": Grey, medium to fine SAND, little coarse Sand, wet, loose	0
12	1026915	83		As Above	0
	1026916	83		As Above	0
16				Bottom of Boring 16'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 1/26/1998

Boring No: NA-SB-39

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver La. Pickle Add.In **LEA Comm No:** 68V7040 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 02/25/97 **End Date** 02/25/97	**Boring ID** **NA-SB-40**

Drilling Contractor: LEA
Drilling Method: GeoProbe
Sampling Method: Micro Core
Groundwater Observations:
Depth: NRM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: D. Brisson
Drilling Foreman: J. Sweeton
Drill Rig: GP5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026917	83		20": Brown, fine SAND, trace very fine Sand, trace organics, moist, loose	0
	1026918	83		Top 8": Brown, fine SAND, trace medium to coarse Sand, trace traprock and asphalt; 4": Black, fill material (asphalt, gravel) wet; 4": Dark brown to black, fine	0
4	1026919	75		to very fine SAND, trace medium Sand, moist, dense; Bottom 4": Orange-brown, fine SAND, trace(-) medium Sand, moist, loose	0
	1026920	75		16": Orange-brown, fine SAND, trace(+) medium Sand, trace(-) coarse Sand, trace iron-staining, wet, loose	0
8	1026921	50		Top 2": Grey, fine SAND, medium, dense; Middle 12": Grey, fine to medium SAND, trace(-) coarse Sand, wet, loose; Bottom 2": Grey, fine SAND, wet, moderately dense 12": As above bottom 2"	0
	1026922	50		12": Grey, fine to medium SAND, trace(-) coarse Sand, wet, loose	0
12	1026923	62		15": Grey, fine to medium SAND, trace(-) coarse Sand, wet, loose	0
	1026924	62		Top 5": As Above; Bottom 10": Grey, CLAY, trace Silt and fine Sand, wet, loose	0
16				Bottom of Boring 16'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 1/26/1998

Boring No: NA-SB-40

LEA
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100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver La. Pickle Add.In **LEA Comm No:** 68V7040 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 02/25/97 **End Date** 02/25/97	**Boring ID** **NA-SB-41**

Drilling Contractor: LEA
Drilling Method: GeoProbe
Sampling Method: Micro Core
Groundwater Observations:
Depth: NRM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: D. Brisson
Drilling Foreman: J. Sweeton
Drill Rig: GP5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026925	75		Dark brown, fine SAND, trace medium Sand, sllightly moist, loose, organic matter (sapric)	0
	1026926	100		Dark brown, fine SAND, trace(-) medium Sand, slightly moist, moderately dense, red-staining, poorly sorted, Quartz, Cobbles	0
4	1026927	50		As Above, wet, no staining	1
	1026928	100		Brown-grey, medium SAND, some(-) trace Sand, wet, loose, poorly sorted	1
8	1026929	42		Brown-grey, fine SAND, trace(-) medium Sand, wet, loose, well sorted, odor	2.4
	1026930	100		Brown-grey, medium SAND, trace fine Sand, wet, loose, poorly sorted	0
12	1026931	0		No Recovery	
	1026932	100		Top 14": Brown-grey, medium SAND, some Sand, wet, loose, poorly sorted; Bottom 10": Olive grey, varved CLAY, wet, dense	0
16				Bottom of Boring 16'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 1/26/1998

Boring No: NA-SB-41

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver La. Pickle Add.In **LEA Comm No:** 68V7040 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 02/25/97 **End Date** 02/25/97	**Boring ID** **NA-SB-42**

Drilling Contractor: LEA
Drilling Method: GeoProbe
Sampling Method: Micro Core
Groundwater Observations:
Depth: NRM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: D. Brisson
Drilling Foreman: J. Sweeton
Drill Rig: GP5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1026933	50		Brown, fine SAND, trace(-) medium Sand, slightly moist, loose, sapric organic matter	0
	1026934	100		Dark brown, fine SAND and(-) medium SAND, slightly moist, medium dense, poorly sorted, mottled, strong rank odor, assorted debris (tile, glass, rubber, etc. 4" from bottom liner)	0
4	1026935	50		Greyish brown, fine SAND, trace(-) medium Sand, slightly moist, moderately dense, well sorted, black-staining, strong rank odor	0
	1026936	100		Greyish brown, medium SAND, some(+) fine Sand, moist, loose, poorly sorted, slight rank odor	0
8	1026937	50		As Above, wet	0
	1026938	100		As Above, no odor	0
12	1026939			No Recovery	
	1026940	83		Top 8": As Above; Bottom 2": Olive-grey; varved CLAY, wet, dense	0
16				Bottom of Boring 16'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 1/26/1998

Boring No: NA-SB-42

LEA
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100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Pickle Co. Soil Piles Add Inv. **LEA Comm No:** 68V7064 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06-02-97 **End Date** 06-02-97	**Boring ID** **NA-SB-43**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: MC
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634280	100		Top 8": Organic matter, little brown, fine SAND and SILT; Middle 8": Yellowish-brown, fine to medium SAND, trace Silt, dry, loose; Bottom 13": Dark brown and black stained, trace SAND, little Silt, trace Cobbles and Cinders, slightly moist, moderately dense	0.9
	1634281 1634282			Top 16": Same as last 13"; Bottom 8": Yellowish-brown, fine to medium SAND, trace Silt, moist, loose	1.1
4	1634283	71		Yellowish-brown, fine to medium SAND, moist, loose; Tope 11"	1.3
	1634284			Top 11": Brownish-yellow to greyish-brown, fine to medium SAND, wet, loose; Bottom 6": Greyish-brown, fine to very fine SAND, wet, loose	1.2
8	1634285	75		Top 8": Grey, very fine SAND, wet, loose; Bottom 8": Grey, fine to medium SAND, wet, loose	1.4
	1634286			Grey, medium to fine SAND, trace(-) coarse Sand, wet, loose	1.3
12	1634287	62		As Above; Top 11": As Above; Bottom 4": Grey, CLAY, wet, loose	1.4
	1634288				3.2
16				Bottom of Boring 16'	
20					
24					

Comments: Boring backfilled with bentonite

Printed On: 1/26/1998

Boring No: NA-SB-43

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Pickle Co. Soil Piles Add Inv. **LEA Comm No:** 68V7064 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06-02-97 **End Date** 06-02-97	**Boring ID** **NA-SB-44**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: MC
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634289	88		Top 1": Organic matter, some brown, fine SAND, dry, loose; Next 5": Strong, brown, fine SAND, trace Silt, trace organic matter, dry, loose; Next 2": Fine and coarse GRAVEL with a Cobble; Bottom 13": Dark yellowish-brown, fine SAND, little Silt, slightly moist, medium dense; Top 1": Cobble, Middle 13": Dark yellowish-brown, fine SAND, little Silt, trace fine Gravel, slightly moist, moderately dense; Bottom 7": Brownish-yellow, fine SAND, trace Silt, moist, moderately dense	0.6
	1634290				0.4
4	1634291	75		Yellowish-brown, fine(+) to medium SAND, moist, loose; As Above, wet	1.2
	1634292				1.5
8	1634293	62		Top 10": Greyish-brown, medium to fine SAND, wet, loose; Bottom 5": Grey, very fine to fine SAND, wet, loose; Top 7": Same as last 5"; Bottom 8": Grey, medium to fine SAND, wet, loose	1.1
	1634294				1.0
12	1634295	62		Grey, medium(+) to fine SAND, trace coarse Sand, wet, loose; As Above	1.6
	1634296				1.4
16				Bottom of Boring 16'	
20					
24					

Comments: Boring backfilled with bentonite

Printed On: 1/26/1998

Boring No: NA-SB-44

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Pickle Co. Soil Piles Add Inv. **LEA Comm No:** 68V7064 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06-02-97 **End Date** 06-02-97	**Boring ID** **NA-SB-45**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: MC
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634297	92		Top 14": Dark yellowish-brown to yellowish-brown, fine SAND, some Silt, trace(-) medium Sand, trace organic matter, slightly moist, loose; Middle 5": Dark yellowish-brown, fine SAND, little Silt, trace fine Gravel, slightly moist, loose; Bottom 3": Strong brown, fine to medium SAND, trace fine Gravel, slightly moist, loose; Top 11": Black-stained and dark brown, fine SAND, little Silt, trace Coal and Cinders, slightly moist, loose; Bottom 11": Brownish-yellow, fine to medium SAND, moist, loose	0.8
	1634298				1.0
4	1634299	62			0.6
	1634300			Yellowish-brown, fine to medium SAND, moist, loose; Top 12": As Above, wet; Bottom 3": Grey, very fine to fine SAND, wet, loose	1.1
8	1634301	58		Grey, very fine to fine SAND (8") grading to fine to medium Sand (9"), wet, loose; Grey, medium(+) to fine SAND, trace(-) coarse Sand, wet, loose	0.4
	1634302				1.1
12	1634303	62		15": As above; Top 12": Grey, medium to fine SAND, trace coarse Sand, wet, loose; Bottom 3": Grey CLAY, wet, loose	1.2
	1634304				4.9
16				Bottom of Boring 16'	
20					
24					

Comments: Boring backfilled with bentonite

Printed On: 1/26/1998

Boring No: NA-SB-45

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Pickle Co. Soil Piles Add Inv. **LEA Comm No:** 68V7064 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06-03-97 **End Date** 06-03-97	**Boring ID** **NA-SB-46**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: MC
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634307	100		Top 12": Yellowish brown, fine SAND, little Silt, trace organic matter, slightly moist, loose; Mid 5": Strong brown, fine SAND, some silt, trace coal and cinders, slightly moist, moderately dense; Bottom 5": Dark brown to black stained, fine SAND, trace organic matter, with Silt, slightly moist, moderately dense	32.0
	1634308 1634309	100		Same as last 5", moist	>1000
4	1634310	58		Top 6": Dark brown and black stained SILT, with fine Sand, trace organic matter, moist, loose; Bottom 8": Brownish grey, fine to medium SAND, trace Silt, trace organic matter, moist, loose	500
	1634311	58		Grey, fine to medium SAND (7"), grading to medium(+) to fine SAND, wet, loose	150
8	1634312	50		Grey, fine to medium SAND, wet, loose	0.2
	1634313	50		Grey, medium(+) to fine SAND, trace(+) coarse Sand, wet, loose	0.2
12	1634314	54		Grey, medium(+) to fine SAND, wet, loose	0.4
	1634315	54		Top 5": Grey, medium to fine SAND, wet, loose; Bottom 8": Grey, varved CLAY, wet, loose	18.
16				Bottom of Boring at 16'	
20					
24					

Comments: Boring backfilled with bentonite

Printed On: 1/26/1998

Boring No: NA-SB-46

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Pickle Co. Soil Piles Add Inv. **LEA Comm No:** 68V7064 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06-03-97 **End Date** 06-03-97	**Boring ID** **NA-SB-47**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: MC
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634316	58		Yellowish brown, fine SAND, with Silt, trace organic matter, trace coal, cinder and glass pieces, slightly moist, loose	0.0
	1634317	58		Top 7": As Above, moderately dense; Bottom 7": Dark brown to black, stained SILT, little fine Sand, little organic matter, moist, loose	0.0
4	1634318	75		Top 5": Same as last 7", wet; Bottom 13": Grey, fine to medium SAND, trace Silt, trace fine brick, organic matter, wet, loose	0.2
	1634319	75		Grey, fine to medium SAND, grading to medium to fine SAND, wet, loose, trace organic matter	30.0
8	1634320	54		Grey, medium to fine SAND, trace coarse Sand, wet, loose,	8.0
	1634321	54		As Above	1.0
12	1634322	75		Top 12": As Above, trace coarse SAND; Bottom 6": Grey, varved CLAY, wet, loose	5.0
	1634323	75		Same as last 6"	40.0
16				Bottom of Boring at 16'	
20					
24					

Comments: Boring backfilled with bentonite

Printed On: 1/26/1998

Boring No: NA-SB-47

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Pickle Co. Soil Piles Add Inv. **LEA Comm No:** 68V7064 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06-03-97 **End Date** 06-03-97	**Boring ID** **NA-SB-48**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: MC
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634324	50		Top 1": Organic matter with brown SILT and fine SAND; Bottom 11": Yellowish brown fine SAND, trace Silt, trace organic matter, dry, loose	0.0
	1634325	50		Top 2" Same as last 11": Bottom 10": Dark yellowish brown, fine SAND and SILT, trace organic matter, trace glass pieces, trace coal and cinders, slightly moist, loose	2.2
4	1634326	62		Top 2": Dark brown, SILT, little fine Sand, little organic matter, wet, loose; Bottom 13": Brownish grey, fine SAND, trace medium Sand, trace fibric organic matter, wet, loose	0.2
	1634327	62		Top 3": Same as last 13": Middle 2": Grey, coarse to medium SAND, trace fine gravel; Bottom 10": Brownish grey, fine to medium SAND, trace organic matter, wet, loose	1.3
8	1634328	67		Top 2": Same as last 10": Middle 5": Grey, fine to very fine SAND, wet, loose; Bottom 8": Grey medium(+) to fine SAND, trace(+) coarse Sand, wet, loose	0.2
	1634329	67		Same as last 8", trace(-) coarse SAND	0.5
12	1634330	62		Grey, fine to medium SAND, wet, loose	0.2
	1634331			Grey, varved CLAY, wet to moist, loose to moderately dense	28.0
16				Bottom of Boring at 16'	
20					
24					

Comments: Boring backfilled with bentonite

Printed On: 1/26/1998

Boring No: NA-SB-48

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Pickle Co. Soil Piles Add Inv. **LEA Comm No:** 68V7064 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06-03-97 **End Date** 06-03-97	**Boring ID** **NA-SB-49**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: MC
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634332	85		Strong brown to yellowish brown, SILT with fine SAND, trace organic matter, dry to slightly moist, loose	0.0
	1634333	85		Top 11": Dark yellowish brown, SILT, with fine Sand, trace coal and cinders, trace(-) coarse gravel, slightly moist, loose; Bottom 6": Dark brown to black, stained SILT, little fine Sand, little organic matter, moist, loose	840
4	1634334	80		Top 3": Same as last 6"; Bottom 13": Grey, fine(+) to very fine SAND, grading to fine to medium Sand, trace organic matter, moist, loose	360
	1634335	80		Grey, fine to medium SAND, grading to medium to fine Sand, trace organic matter, wet, loose	12.0
8	1634336	70		Grey, fine to very fine SAND, wet, loose	5.0
	1634337	70		Grey, fine SAND, (5") grading to medium to fine Sand, wet, loose, trace coarse Sand	0.7
12	1634338	60		Grey, fine to medium SAND, wet, loose	2.2
	1634339	60		Grey, varved CLAY, wet, loose	30.0
16				Bottom of Boring at 16'	
20					
24					

Comments: Boring backfilled with bentonite

Printed On: 1/26/1998

Boring No: NA-SB-49

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. Phase I/II **LEA Comm No:** 68V7060 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 08/04/97 **End Date** 08/04/97	**Boring ID** **NA-SB-55**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1640014	92		Punched through 3" asphalt; Top 6": Process stone, fine and coarse Gravel, little asphalt pieces, trace concrete pieces; Middle 10": Strong brown, fine SAND, little Silt, trace asphalt pieces, trace medium Sand, slightly moist, loose; Bottom 28": Yellowish brown, fine to medium SAND, moist to wet, loose, wet at 40"	2.3
	1640015				2.2
4	1640016	75		Top 6": Brown, fine SAND, trace medium Sand, trace Silt, wet, loose; Middle 22": Yellowish brown, fine to medium SAND, trace coarse Sand, wet, loose; Bottom 8": Light olive brown, fine SAND, wet, loose	3.2
	1640017 1640018				2.2
8	1640019	496		Greyish brown, fine to coarse SAND, trace pea size Gravel, wet, loose, slight coarsening downward	1.9
	1640020				1.9
12	1640021	50		As Above, without coarsening downward	1.9
	1640022				1.2
16				Bottom of Boring at 16'	
20					
24					

Comments:

Printed On: 2/9/1998

Boring No: NA-SB-55

LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. Phase I/II **LEA Comm No:** 68V7060 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 08/04/97 **End Date** 08/04/97	**Boring ID** **NA-SB-56**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: At: Hours
Depth: At: Hours

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1640023	88		Punched through 4" Asphalt; Top 10": Reddish brown, fine and coarse GRAVEL, little fine to coarse Sand, trace Silt, trace asphalt, concrete pieces; Middle 10": Yellowish brown, fine SAND, trace Silt, trace medium Sand, slightly moist, loose; Bottom 22": Yellowish brown, fine SAND, trace medium Sand, moist to wet, loose, wet at 37"	1.5
	1640024				1.7
4	1640025	62		Top 6": Yellowish brown, fine SAND, trace Silt, wet, loose; Bottom 24": Yellowish brown, fine to medium SAND, trace coarse Sand, wet, loose, dark brown staining at 12"	2.3
	1640026				2.5
8	1640027	96		Yellow brown to greyish brown, medium to fine SAND, trace coarse Sand, trace(-) pea size Gravel, wet, loose	2.0
	1640028				1.9
12	1640029	83		Top 28": As Above, no Gravel; Bottom 12": Grey CLAY, trace brown, fine to very fine Sand, wet, moderately dense, thinly laminated	1.5
	1640030				1.0
16				Bottom of Boring at 16'	
20					
24					

Comments:

Printed On: 2/9/1998

Boring No: NA-SB-56

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. Phase I/II **LEA Comm No:** 68V7060 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 08/04/97 **End Date** 08/04/97	**Boring ID** **NA-SB-57**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1640031	79		Punched through 3" asphalt; Top 6": Red, fine to coarse SAND and process stone, fine and coarse GRAVEL, trace bituminous asphalt, dry, loose; Bottom 32": Strong brown to yellowish brown, fine SAND, trace Silt (top 10"), trace medium Sand, slightly moist to moist, loose	2.1
	1640032				2.5
4	1640033	75		Top 18": Yellowish brown, fine SAND, trace medium Sand, moist to wet, loose, micaceous, wet at 14"; Bottom 18": Yellowish brown, fine to medium SAND, trace coarse Sand, wet, loose	1.6
	1640034				2.0
8	1640035	88		Top 20": Greyish brown, fine to medium SAND, trace coarse Sand, wet, loose; Middle 6": Greyish brown, fine to very fine SAND, trace medium Sand, wet, loose; Bottom 16": Same as top 20", trace pea size Gravel	1.1
	1640036				1.2
12	1640037	75		Top 8": Same as above, last 16" (yellowish brown); Middle 18": Greyish brown, fine to medium SAND, wet, loose; Bottom 10": Grey, CLAY, trace fine to very fine Sand and Silt, wet, loose	1.2
	1640038				1.3
16				Bottom of Boring at 16'	
20					
24					

Comments:

Printed On: 2/9/1998

Boring No: NA-SB-57

LEA
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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. Phase I/II **LEA Comm No:** 68V7060 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 08/04/97 **End Date** 08/04/97	**Boring ID** **NA-SB-58**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1640039	83		Punched through 3" asphalt; Top 5": Process stone, fine and coarse GRAVEL, trace asphalt pieces, trace red, fine to coarse Sand; Bottom 35": Strong brown to light yellowish brown, fine SAND, trace Silt (top 10"), trace medium Sand, dry to moist, loose	1.7
	1640040				2.1
4	1640041	67		Yellowish brown, fine to medium SAND, trace coarse Sand (Bottom 12"), moist to wet, loose, wet at 8"	2.2
	1640042				2.4
8	1640043	75		Top 28": Greyish brown, fine to medium SAND, trace coarse Sand, wet, loose; Bottom 8": Greyish brown, fine to coarse SAND, trace pea size Gravel, wet, loose	1.8
	1640044				1.9
12	1640045	83		Top 16": As Above; Middle 20": Greyish brown, fine to medium SAND, wet, loose; Bottom 4": Grey, CLAY, trace fine to very fine Sand and Silt, wet, moderately dense	1.8
	1640046				1.5
16				Bottom of Boring at 16'	
20					
24					

Comments:

Printed On: 2/9/1998

Boring No: NA-SB-58

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. Phase I/II **LEA Comm No:** 68V7060 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 08/04/97 **End Date** 08/04/97	**Boring ID** **NA-SB-59**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1640047	88		Punched through 3" asphalt; Top 4": Reddish brown, fine to coarse SAND, trace fine and coarse Gravel, trace asphalt pieces; Bottom 38": Strong brown to yellowish brown, fine SAND, trace Silt (top 12"), trace medium Sand, dry to moist, loose, slight coarsening downward	2.2
	1640048				1.9
4	1690049	79		Yellowish brown, fine to medium SAND, trace coarse Sand, trace(-) pea size Gravel, wet, loose, drk brown staining at 12-14"	2.3
	1640050				1.8
8	1640051	62		As Above, Greyish brown, no staining, slight coarsening downward	1.8
	1640052				1.3
12	1640053	100		Top 39": Greyish brown, fine to medium SAND, trace(-) coarse Sand, wet, loose; Bottom 9": Grey, CLAY, trace fine to very fine Sand and Silt, wet, loose	1.0
	1640054				1.2
16				Bottom of Boring at 16'	
20					
24					

Comments:

Printed On: 2/9/1998

Boring No: NA-SB-59

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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. Phase I/II **LEA Comm No:** 68V7060 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 08/05/97 **End Date** 08/05/97	**Boring ID** **NA-SB-60**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1640060	92		Punched through 3" asphalt; top 8": Reddish brown, fine and coarse GRAVEL, fine to coarse Sand, trace bituminous asphalt; Bottom 36": Strong brown to yellowish brown, fine SAND, trace Silt, trace medium Sand, grading to fine Sand, trace medium Sand, dry to moist, loose	1.6
	1640061				2.1
4	1640062 1640063	62		Top 25": Yellowish brown, fine to medium SAND, moist to wet, loose, wet at 12"; Bottom 5": Brown, fine to very fine SAND, wet, loose	1.7
	1640064				1.5
8	1640065	75		Top 12": Yellowish brown, medium to fine SAND, wet, loose, dark brown staining at 4-8"; Middle 10": Brown, fine to medium SAND, trace coarse Sand, wet, loose; Bottom 14": Greyish brown, fine to coarse SAND, wet, loose	1.4
	1640066				1.4
12				No Recovery	
				No Recovery	
16				Bottom of Boring at 16'	
20					
24					

Comments:

Printed On: 2/9/1998

Boring No: NA-SB-60

LEA
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GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. Phase I/II **LEA Comm No:** 68V7060 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 08/05/97 **End Date** 08/05/97	**Boring ID** **NA-SB-61**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1640069	83		Top 16": Brown, fine SAND, little Silt, trace medium Sand, trace organic matter, dry to slightly moist, loose; Bottom 24": Strong brown to yellowish brown, fine SAND, trace Silt, trace medium Sand, grading to fine Sand, trace medium Sand, slightly moist to moist, loose	1.2
	1640070				1.4
4	1640071	83		Yellowish brown, medium to fine SAND, trace coarse Sand, moist to wet, loose, wet at 16"	1.4
	1640072				1.3
8	1640073	75		Brown to yellowish brown, fine to medium SAND, trace coarse Sand, wet, loose	1.0
	1640074				0.8
12	1640075	58		Top 12": Greyish brown, fine to medium SAND, wet, loose; Bottom 16": Greyish brown, medium to fine SAND, trace coarse Sand, wet, loose	2.5
	1640076				3.2
16				Bottom of Boring at 16'	
20					
24					

Comments:

Printed On: 2/9/1998

Boring No: NA-SB-61

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100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Silver Lane Pickle Co. Phase I/II **LEA Comm No:** 68V7060 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 08/05/97 **End Date** 08/05/97	**Boring ID** **NA-SB-62**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1640077	75		Top 8": Brown, fine SAND, little Silt, trace medium Sand, trace organic matter; Middle 6": Strong brown, fine SAND, trace Silt, trace medium Sand, slightly moist, loose; Bottom 22": Strong brown to light yellowish brown, fine SAND, trace medium Sand, slightly moist to moist, loose	1.2
	1640078				1.1
4	1640079	62		Top 12": Light yellowish brown, fine SAND, trace medium Sand, moist to wet, loose, wet at 10"; Next 5": Yellowish brown, medium SAND, trace coarse Sand, wet, loose; Next 6": Brown, fine to very fine SAND, wet, loose; Bottom 7": Yellowish brown, medium to fine SAND, trace coarse Sand, wet, loose	1.3
	1640080				1.5
8	1640081	71		Yellowish brown to greyish brown, medium to fine SAND, trace coarse Sand, trace pea size Gravel, dark brown and orange staining at 6-18", wet, loose	1.1
	1640082				1.0
12	1640083	58		Top 10": Greyish brown, fine to very fine SAND, wet, loose; Middle 12": Greyish brown, fine to coarse(+) SAND, trace pea size Gravel, wet, loose; Bottom 6": Greyish brown, medium to fine SAND, wet, loose	0.7
	1640084				0.3
16				Bottom of Boring at 16'	
20					
24					

Comments:

Printed On: 2/9/1998

Boring No: NA-SB-62

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GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number:	1/23/1998	
Client:	**End Date**	**NA-SB-63**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates, PC
Logged by: Boris Tomicic
Drilling Method: Direct Push
Drilling Foreman: Dave Brisson
Sampling Method: Macro Core
Drill Rig: Geoprobe 5400
Groundwater Observation
Surface Elevation: 0.00
Depth: at: : ,
Northing: 0.0
Depth: at: Hours &
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		92		top 1': dark brown fine SAND, some (-) medium Sand, slightly moist, loose, poorly sorted, organic matter: bottom 8": brown fine SAND, some (-) Sand slightly moist, moderately dense, poorly sorted: bottom 2': greyish brown fine SAND and (-) medium Sand, moist, moderately dense, poorly sorted	
4					

Comments:

LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-64**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates, PC
Logged by: Boris Tomicic
Drilling Method: Direct Push
Drilling Foreman: Jon Sweeton
Sampling Method: Macro Core
Drill Rig: Geoprobe 5400
Groundwater Observation
Surface Elevation: 0.00
Depth: at: : ,
Northing: 0.0
Depth: at: Hours &
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		94		dark brown fine SAND, trace (+) medium SAND, trace (-) SILT, slightly moist, moderately dense, well sorted, organic matter bottom half brown fine SAND, some (+) medium SAND, slightly moist, moderately dense, poorly sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-65**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: at: : ,
Depth: at: Hours &

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		92		top 14" dark brown fine SAND and SILT, slightly moist, medium dense, well sorted, organic matter next 6" brown fine SAND, trace (-) medium SAND, slightly moist, dense, poorly sorted bottom 24" brown fine SAND, some (+) medium SAND, slightly moist, moderately dense, poorly sorted	
4					

Comments:

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GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-66**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Logged by: Boris Tomicic
Drilling Method: Direct Push
Drilling Foreman: Dave Brisson
Sampling Method: Macro Core
Drill Rig: Geoprobe 5400
Groundwater Observation
Surface Elevation: 0.00
Depth: **at:** : ,
Northing: 0.0
Depth: **at:** **Hours &**
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		88		top 1' dark brown fine SAND and SILT, slightly moist, dense, well sorted, organic matter next 14" greyish brown fine SAND, some (+) SILT, slightly moist, dense, well sorted bottom 16" brown fine SAND, some (-) medium SAND, slightly moist, loose, poorly sorted	
4					

Comments:

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GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number:	1/23/1998	
Client:	**End Date**	**NA-SB-67**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: at: : ,
Depth: at: Hours &

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		94		top 14" dark brown fine SAND, some (+) SILT, slightly moist, loose, poorly sorted, organic matter next 19" greyish brown fine SAND and SILT, dry, dense, well sorted bottom 12" brown fine SAND, some (-) medium SAND, slightly moist moderately dense, poorly sorted	
4					

Comments:

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GEOLOGIC BORING LOG

Project:	**Start Date** 1/23/1998	**Boring ID**
LEA Commission Number: .		
Client:	**End Date** 1/23/1998	**NA-SB-68**
Location: P&W East Hartford		

Drilling Contractor: Loureiro Engineering Associates
Logged by: Boris Tomicic
Drilling Method: Direct Push
Drilling Foreman: Dave Brisson
Sampling Method: Macro Core
Drill Rig: Geoprobe 5400
Groundwater Observation
Surface Elevation: 0.00
Depth: at: : ,
Northing: 0.0
Depth: at: Hours &
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		92		top 1' dark brown fine SAND, some (+) SILT, dry, medium dense, poorly sorted, organic matter next 11" brown fine SAND and (-) SILT, dry, dense, poorly sorted bottom 21" reddish brown fine SAND, trace (+) medium SAND, slightly moist, loose, poorly sorted	
4					

Comments:

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100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-69**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Logged by: Boris Tomicic
Drilling Method: Direct Push
Drilling Foreman: Dave Brisson
Sampling Method: Macro Core
Drill Rig: Geoprobe 5400
Groundwater Observation
Surface Elevation: 0.00
Depth: **at:** : ,
Northing: 0.0
Depth: **at:** **Hours &**
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		88		top 14" dark brown fine SAND, some (+) SILT, dry, medium dense, poorly sorted, organic matter next 16" brown fine SAND and (-) SILT, dry, dense, poorly sorted bottom 12" reddish brown fine SAND, trace (+) medium SAND, slightly moist, loose, poortly sorted	
4					

Comments:

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GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-70**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		90		top 15" brown fine SAND, some (+) SILT, dry, loose, poorly sorted, organic matter next 16" brown SILT, some (+) fine SAND, dry, medium dense, poorly sorted bottom 12" reddish brown fine SAND, some (-) medium SAND, dry, loose, poorly sorted	
4					

Comments:

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100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number:	1/23/1998	
Client:	**End Date**	**NA-SB-71**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: at: : ,
Depth: at: Hours &

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0 | | | | | | 4		90		top 4" dark brown SILT, some (+) fine SAND, slightly moist, medium dense, poorly sorted, organic matter next 13" brwon fine SAND, some (+) SILT, slightly moist, medium dense, poorly sorted next 1" brown fine SAND, trace (+) medium SAND, slightly moist, medium dense, poorly sorted, iron staining bottom 1" brown fine SAND, trace (+) medium SAND, slightly moist, medium dense, poorly sorted	

Comments:

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GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-72**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: at: : ,
Depth: at: Hours &

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	.	92		top 6" dark brown fine SAND, trace (-) SILT, dry, loose, poorly sorted next 12" brown fine SAND, trace (-) medium SAND, slightly moist, moderately dense, poorly sorted next 8" greyish brown fine SAND, some (-) SILT, slightly moist, dense, well sorted, bottom 18" brown fine SAND, trace (+) medium SAND, moist, loose, poorly sorted	
4					

Comments:

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GEOLOGIC BORING LOG

Project:	**Start Date** 1/23/1998	**Boring ID**
LEA Commission Number: .		
Client:	**End Date** 1/23/1998	**NA-SB-73**
Location: P&W East Hartford		

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: at: : ,
Depth: at: Hours &

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		96		top 14" dark brown fine SAND, trace (-) SILT, dry, moderately dense, poorly sorted, organic matter next 8" brown fine SAND, some (+) SILT, moderately dense, dry, well sorted next 6" brown fine SAND, some (+) medium SAND, slightly moist, loose,iron staining, poorly sorted bottom 18" brown fine SAND, some (+) medium sAND, slightly moist, loose, poorly sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	Start Date	Boring ID
LEA Commission Number: .	1/23/1998	
Client:	End Date	NA-SB-74
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: at: : ,
Depth: at: Hours &

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		92		top 4" topsoil bottom 40" light brown to grey brow fine to very fine SAND, trace (-) organic matter, moist, loose	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-75**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: at: : ,
Depth: at: Hours &

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		75		top 2" topsoil next 30" light brown fine to very fine SAND, trace (-) organic matter, moist, loose bottom 4" grey very fine SAND and SILT, moist, dense	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-76**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		88		top 7" topsoil next 29" brown fine SAND, trace (-) SILT, dry, medium dense, poorly sorted bottom 6" greyish brown fine SAND, some (+) SILT, slightly moist, dense, well sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-77**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: at: : ,
Depth: at: Hours &

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0 | | | | | | | 4		92		top 8" topsoil next 18" light brown fine to very fine SAND, trace (-) SILT, trace organic matter, moist, dense next 2" light brown very fine sAND, trace (+) SILT, moist, dense bottom 16" grey very fine SAND and SILT, moist, dense	

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-78**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: at: : ,
Depth: at: Hours &

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		92		top 8" topsoil next 4" light brown fine SAND, moist, loose next 12" grey very fine SAND, trace (+) SILT, moist, moderately dense next 4" light brown fine SAND, trace (-) medium SAND, moist, loose bottom 16" grey fine SAND, trace (-) very fine SAND, moist, loose	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number:	1/23/1998	
Client:	**End Date**	**NA-SB-79**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Logged by: Boris Tomicic
Drilling Method: Direct Push
Drilling Foreman: Dave Brisson
Sampling Method: Macro Core
Drill Rig: Geoprobe 5400
Groundwater Observation
Surface Elevation: 0.00
Depth: at: : ,
Northing: 0.0
Depth: at: Hours &
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		90		top 16" topsoil next 5" brown fine SAND, trace (-) SILT, moist, moderately dense, poorly sorted bottom 22" brown fine SAND, wet, loose	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-80**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 3.5 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		88		top 1' topsoil 12" - 42"r brown fine SAND, some (-) medium SAND, moist to wet, moderately dense to loose, poorly sorted	
4 ,					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-81**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 3.5 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		92		top 4" topsoil 4" - 24" dark brown fine sAND, some (+) medium SAND, moist, loose, poorly sorted 24" - 36"" dark brown SILT, some (+) fine SAND, moist, moderately dense, well sorted 36" - 44"" brown fine SAND, some (+) medium SAND, wet, loose, poorly sorted, top 2" red staining	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-82**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 3.5 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		94		top 2" topsoil 2" - 45" brown fine SAND, trace (+) medium SAND, moist to wet, moderately dense, poorly sorted, fibric matter in top 14"	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-83**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 3.5 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		92		4" topsoil with cobbles 6" reddish brown fine SAND, some (+) SILT, dry, medium dense, pebbles 34" greyish brown fine SAND, some (_) medium SAND, slightly moist to moist, moderately dense, to loose, poorly sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	Start Date	Boring ID
LEA Commission Number:	1/23/1998	
Client:	End Date	NA-SB-84
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Logged by: Boris Tomicic
Drilling Method: Direct Push
Drilling Foreman: Dave Brisson
Sampling Method: Macro Core
Drill Rig: Geoprobe 5400
Groundwater Observation
Surface Elevation: 0.00
Depth: 3.5 **at:** : ,
Northing: 0.0
Depth: **at:** **Hours &**
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		77		top 1" topsoil 30" dark brown fine SAND, some (+) medium SAND and PEBBLES and COBBLES, moderately dense, slightly moist, ground up asphalt (some pebbles covered with yellow paint from line striping) bottom 6" brown medium sAND, trace (+) fine SAND, moist, loose, poorly sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-85**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 3.5 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		92		top 1" topsoil dark brown to black fine SAND, some (+) SILT, slightly moist, moderately dense to dense, poorly sorted, fibric to humic organic matter	
4		100		top 16" dark brown to black fine SAND, some (+) SILT, slightly moist, moderately dense to dense, poorly sorted, fibric to humic organic matter, red staining at 15" 16" - 48" grey medium SAND, trace fine SAND, moist to wet, loose, poorly sorted	
8					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-86**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Logged by: Boris Tomicic
Drilling Method: Direct Push
Drilling Foreman: Dave Brisson
Sampling Method: Macro Core
Drill Rig: Geoprobe 5400
Groundwater Observation
Surface Elevation: 0.00
Depth: 3.5 **at:** : ,
Northing: 0.0
Depth: **at:** **Hours &**
Easting: 0.0

Depth	Sample Information			Soil Description	PID/FID
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	ppm
0		92		top 4" topsoil 24" brown fine SAND, some (-) medium SAND, slightly moist, loose, poorly sorted, fibric organic matter 8" grey fine SAND, trace (+) SILT, slightly moist, moderately dense, poorly sorted 36" - 33" reddish brown fine SAND, trace (-) medium SAND, moist, loose, poorly sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-87**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 3.5 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		92		top 4" topsoil 24" brown fine SAND, trace (+) medium SAND, slightly moist, loose, poorly sorted, fibric matter 8" grey fine SAND, trace (+) SILT, slibhtly moist, moderately dense, poorly sorted bottom 8" reddish brown fine SAND, trace (-) medium sAND, moist, loose, poorly sorted	
4 ,					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-88**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Logged by: Boris Tomicic
Drilling Method: Direct Push
Drilling Foreman: Dave Brisson
Sampling Method: Macro Core
Drill Rig: Geoprobe 5400
Groundwater Observation
Surface Elevation: 0.00
Depth: 3.5 **at:** : ,
Northing: 0.0
Depth: **at:** **Hours &**
Easting: 0.0

Depth	Sample Information			Soil Description	PID/FID
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	ppm
0		83		top 20" topsoil 20" - 28" dark brown fine SAND, trace (-) SILT, moist, dense 28" - 48" gryish brown fine SAND, some (-) medium SAND, moist to wet, loose, poorly sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-89**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 3.5 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		92		0" - 12" topsoil 12" - 24" brown fine SAND, trace (+) medium SAND, moist, loose, poorly sorted 24" - 42" dark brown fine SAND, trace (+) SILT, moist, dense, red staining at 3' 42" - 44" reddish brown fnine SAND, some (_) medium SAND, moist to wet, loose, poorly sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-90**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 0.8 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0 , 4		92		0" - 14" topsoil 14" - 32" dark brown to black fine SAND, trace (-) medium SAND, slightly moist, dense, pebbles 32" - 44" reddish brown fine SAND, some (+) medium SAND, moist to wet, loose, poorly sorted	

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-91**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 0.8 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		92		0" - 18" topsoil 18" - ?" grey fine SAND, trace (-) SILT, moist, dense ? - 44" fine SAND, some (-) medium SAND, moist to wet, loose, poorly sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-92**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 0.8 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0 ,		88		0" - 12" topsoil 12" - 20" brown fine SAND, trace (-) medium SAND, moist moderately dense, poorly sorted 20" - 26" dark brown fine SAND, trace (+) SILT, moist, dense 26" - 42" brown fine SAND, some (+) medium SAND, moist to wet, loose, poorly sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-93**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 0.8 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		88		0" - 6" topsoil 6" - 10" brown fine SAND with medium SAND and PEBBLES, moist, loose porrly sorted 10" - 22" grey fine SAND, trace (-) medium SAND, moist, moderately dense 22" - 42" brown fine SAND, some (+) medium SAND, moist to wet, loose, poorly sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-94**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 0.8 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	PID/FID
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	ppm
0 , 4		88		0" - 4" topsoil 4" - 42" greyish brown fine SAND, trace (+) medium SAND, moist to wet, loose, poorly sorted	

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-95**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 0.8 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	PID/FID
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	ppm
0 , 4		92		0" - 6" topsoil 6" - 20" dark brown fine SAND and SILT, moist, dense 20" - 44" greyish brown fine SAND, some (-) medium SAND, moist to wet, loose, poorly sorted	

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-96**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 0.8 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0 , 4		92		0" - 34" topsoil 34" - 44" greyish brown fine SAND, some (+) medium SAND, moist to wet, loose, poorly sorted	

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-97**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 0.8 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		83		0" - 12" topsoil 12" - 20" grey fine SAND, trace (+) SILT, moist, dense 20" - 40" greyish brown fine sAND, some (+) medium SAND, moist to wet, loose, poorly sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
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GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-98**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 0.8 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0 ,		88		0" - 20" topsoil 20" - 42" greyish brown fine SAND, some (+) medium SAND, wet, loose, poorly sorted	
4					

Comments:

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
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GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-99**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Logged by: Boris Tomicic
Drilling Method: Direct Push
Drilling Foreman: Dave Brisson
Sampling Method: Macro Core
Drill Rig: Geoprobe 5400
Groundwater Observation
Surface Elevation: 0.00
Depth: 0.8 **at:** : ,
Northing: 0.0
Depth: **at:** **Hours &**
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		83		0" - 10" topsoil 10" - 40" grey to greyish brown fine SAND, some (+) medium SAND, wet, loose, poorly sorted	
4					

Comments:

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GEOLOGIC BORING LOG

Project:	**Start Date**	**Boring ID**
LEA Commission Number: .	1/23/1998	
Client:	**End Date**	**NA-SB-100**
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observation
Depth: 1.3 **at:** : ,
Depth: **at:** **Hours &**

Logged by: Boris Tomicic
Drilling Foreman: Dave Brisson
Drill Rig: Geoprobe 5400
Surface Elevation: 0.00
Northing: 0.0
Easting: 0.0

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0		88		0" - 10" topsoil 10" - 16" brown fine SAND, trace (+) medium SAND, moist, moderately dense 16" - 42" reddish brown fine SAND, some (+) medium SAND, wet, loose, poorly sorted	
4					

Comments:

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GEOLOGIC BORING LOG

Project:	Start Date	Boring ID
LEA Commission Number: .	1/23/1998	
Client:	End Date	NA-SB-101
Location: P&W East Hartford	1/23/1998	

Drilling Contractor: Loureiro Engineering Associates
Logged by: Boris Tomicic
Drilling Method: Direct Push
Drilling Foreman: Dave Brisson
Sampling Method: Macro Core
Drill Rig: Geoprobe 5400
Groundwater Observation
Surface Elevation: 0.00
Depth: 1.8 **at:** : ,
Northing: 0.0
Depth: **at:** **Hours &**
Easting: 0.0

Depth	Sample Information			Soil Description	PID/FID
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	ppm
0		83		0" - 12" topsoil 12" - 22" brown fine SAND, trace (+) medium SAND, moist, moderately dense 22" - 40" reddish brown fine SAND, some (+) medium SAND, wet, loose, poorly sorted	
4					

Comments:

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100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: North Klondike Soil Piles **LEA Comm No:** 68TR656 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 8/8/96 **End Date** 8/8/96	**Boring ID** **NK-SB-51**

Drilling Contractor: LEA
Drilling Method: Hand Auger
Sampling Method: Bucket Auger
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: F. Postma
Drilling Foreman: B. Tomicic
Drill Rig: Hand Auger
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1016789	90		Pale yellow, fine SAND, little medium Sand, loose, moist, Silt inclusions	7.8
	1016790	100		12": As Above; 12": Reddish brown, fine SAND, little Silt, moderately dense, moist	17.3
4	1016791	100		Reddish grey, fine SAND, some Silt, dense, moist to very moist	1.8
	1016792	100		As above	0.0
8				Bottom of Boring at 8'	
12					
16					
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/23/1998

Boring No: NK-SB-51

LEA
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GEOLOGIC BORING LOG

Project: North Klondike Soil Piles **LEA Comm No:** 68TR656 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 8/8/96 **End Date** 8/8/96	**Boring ID** **NK-SB-52**

Drilling Contractor: LEA
Drilling Method: Hand Auger
Sampling Method: Bucket Auger
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: F. Postma
Drilling Foreman: B. Tomicic
Drill Rig: Hand Auger
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1016793	100		Pale yellow, fine SAND, trace medium Sand, trace(-) Silt, loose, moist, brick fragments	0.0
	1016794	100		Yellowish red, fine SAND, little Silt, moderately dense, moist	0.0
4	1016795	100		As above	0.2
	1016796	100		Pale yellow to yellowish olive, fine SAND, little medium Sand, loose, moist, brick fragments	0.0
8				Bottom of Boring at 8'	
12					
16					
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/23/1998

Boring No: NK-SB-52

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100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: North Klondike Soil Piles **LEA Comm No:** 68TR656 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 8/8/96 **End Date** 8/8/96	**Boring ID** **NK-SB-53**

Drilling Contractor: LEA
Drilling Method: Hand Auger
Sampling Method: Bucket Auger
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: F. Postma
Drilling Foreman: B. Tomicic
Drill Rig: Hand Auger
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1016798	100		Yellowish brown, fine SAND, some medium Sand, loose, moist, plastic sheeting, brick fragments, metal	
	1016799	100		As above	
4	1016800	100		As above; Strong brown to black, fine SAND, little Silt, moderately dense, moist	
				Auger refusal at 6.2'	
8					
12					
16					
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 1/23/1998

Boring No: NK-SB-53

LEA
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GEOLOGIC BORING LOG

Project: Soil Piles Additional Investigation **LEA Comm No:** 68VC620 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/30/96 **End Date** 10/30/96	**Boring ID** **NK-SB-215**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020837	100		Dark brown, fine to medium SAND and SILT, trace(-) fine Gravel, moist, loose, root fragments	0.0
	1020838	100		As above	0.0
4	1020839	100		Dark reddish brown, fine to medium SAND, little Silt, moist, loose	1.0
	1020840	100		4": As above; 19": Dark brown, fine SAND and SILT, little medium Sand, wet, loose	0.0
8	1020841	100		Brown, fine to medium SAND, trace Silt, wet, loose	0.3
	1020842	100		Yellowish brown, medium to coarse SAND, some fine Sand, trace Silt, wet, loose	0.1
12	1020843	100		10": Light brown, fine SAND, trace Silt, wet, loose; 13": Fine to medium SAND, little Silt, wet, loose	0.2
	1020844	100		Olive grey, varved CLAY, trace Silt, wet, stiff	0.0
16				Bottom of boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 1/23/1998

Boring No: NK-SB-215

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Soil Piles Additional Investigation **LEA Comm No:** 68VC620 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/31/96 **End Date** 10/31/96	**Boring ID** **NK-SB-216**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020847	100		Strong brown, fine to medium SAND, some Silt, moist, loose, root fragments	0.0
	1020848	100		Very dark, greyish brown, fine SAND and SILT, moist, loose, root fragments	0.1
4	1020849 1020850	100		6": As Above; 17": Yellowish brown, fine SAND, some Silt, moist, loose	0.2
	1020851	100		4": As Above; 19": Dark brown/black, fine SAND and SILT, moist, loose, root fragments	0.2
8	1020852	100		Dark yellowish brown, medium SAND and fine SAND, little coarse Sand, trace(+) Silt, trace(-) fine Gravel, wet at 9-10', loose	0.2
	1020853	100		Dark yellowish brown, medium to coarse SAND, some fine Sand, little fine Gravel, trace Silt, wet, loose	0.6
12	1020854	100		Olive grey, varved CLAY, trace Silt, wet, very stiff	0.2
	1020855	100		As Above	0.3
16				Bottom of Boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 1/23/1998

Boring No: NK-SB-216

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LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Soil Piles Additional Investigation **LEA Comm No:** 68VC620 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/31/96 **End Date** 10/31/96	**Boring ID** **NK-SB-217**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours** ▽
Depth: **At:** **Hours** ▼

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020856	75		Brown, fine SAND, some Silt, trace medium Sand, moist, loose	0.0
	1020857	75		15": As Above; 2": Black, fine SAND and SILT, moist, slightly loose	0.0
4	1020858	100		12": As Above; 11": Yellowish brown, fine to medium SAND, little Silt, wet, loose	0.0
	1020859	100		10": As Above; 13": Yellowish brown, medium to coarse SAND, some fine Sand, little fine Gravel, trace Silt, wet, loose	54.0
8	1020860	100		As Above	0.2
	1020861	100		Olive grey, varved CLAY, trace Silt, wet, stiff	0.3
12	1020862	100		As Above	0.0
	1020863	100		As Above	0.0
16				Bottom of Boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 1/23/1998

Boring No: NK-SB-217

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GEOLOGIC BORING LOG

Project: Soil Piles Additional Investigation **LEA Comm No:** 68VC620 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 10/31/96 **End Date** 10/31/96	**Boring ID** **NK-SB-218**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours** ▽
Depth: **At:** **Hours** ▼

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1020864	100		Brown, fine SAND, with Silt, trace fine Gravel, moist, loose, root fragments	0.0
	1020865	100		Brown, fine SAND, with Silt, trace fine Gravel, moist, loose	0.0
4	1020866	100		As Above	0.0
	1020867	100		As above, wet	0.0
8	1020868	100		As above	0.0
	1020869	100		15": As above; 8": Brown, medium SAND, some fine Sand, little coarse Sand, trace Silt, wet, loose	0.0
12	1020870	100		6": As above; 17": Olive grey, varved CLAY, trace Silt, wet, stiff	0.0
	1020871	100		As above	0.0
16				Bottom of boring at 15.0'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 1/23/1998

Boring No: NK-SB-218

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GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/12/97 **End Date** 03/12/97	**Boring ID** **NK-SB-272**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028166	100		Top 2": Organic debris; Middle 8": Dark brown, fine SAND, trace Silt, little organic matter; Bottom 1': Brownish yellow, fine SAND, trace Silt, trace organic matter, moist, loose	0
	1028167	100		Top 6": Yellowish brown, fine SAND, trace organic matter, moist, loose; Bottom 1.5': Dark brown, fine SAND, trace Silt, trace organic matter, moist, loose	0
4	1028168 1028170	75		Top 8": Dark brown, fine to medium SAND, wet, loose, orange mottling 5-6'; Bottom 1': Brown, fine to medium SAND	0.2
	1028169	75		Top 6": Brown, fine to medium SAND, with dark brown mottling, wet, loose; Bottom 1': Yellowish brown, medium SAND, wet, loose	80.0
8	1028171	60		Top 8": Greyish brown, fine to medium SAND, trace coarse Sand, wet, loose; Bottom 6": Yellowish brown, fine to medium SAND, trace coarse Sand, wet, loose	0.4
	1028172	60		Top 8": Yellowish brown, medium SAND, dark brown staining at sand-clay interface; Bottom 6": Grey, CLAY, wet, loose	0.2
12				Bottom of Boring at 12'	
16					
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/6/1998

Boring No: NK-SB-272

LEA
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100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/12/97 **End Date** 03/12/97	**Boring ID** **NK-SB-273**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028173	100		Top 6": Drk brown, fine SAND, trace Silt, trace organic matter, dry, loose; Bottom 1.5': Brown to orange-brown, fine SAND, trace organic matter, dry, loose	0
	1028174	100		Yellowish brown, fine SAND, trace(-) fine Gravel, moist, loose	0.2
4	1028175	50		Yellowish brown, fine SAND, trace(-) medium Sand, trace(-) fine Gravel, moist, loose	4.8
	1028176	50		As Above	0.4
8	1028177	80		Top 1': Dark brown to brown, fine SAND, trace organic matter, wet, loose; Bottom 0.5': Greyish brown, fine to medium SAND, wet, loose	6.0
	1028178	80		Greyish brown, fine to medium SAND, mottling (dark brown) at 11-12', wet, loose	4.0
12	1028180	80		Top 1.5': Yellowish brown, fine to medium SAND, wet, loose; Bottom 4": Grey, varved CLAY, wet, loose; Dark brown staining at clay/sand interface	0.6
	1028181	80		Grey, varved CLAY, wet, loose	0.3
16				Bottom of Boring at 16'	
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/6/1998

Boring No: NK-SB-273

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/12/97 **End Date** 03/12/97	**Boring ID** **NK-SB-274**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028182	100		Top 4": Organic debris; Middle 6": Dark brown, fine SAND, little organic matter, dry, loose; Botom 1': Brown to orange brown, fine SAND, dry loose	0
	1028183	100		Brown to orange brown, fine SAND, dry, loose, Cobble at 2'	0
4	1028184	50		Brown to orange brown, fine SAND, Cobbles at 5', moist, loose	0.4
	1028185	50		Dark yellowish brown, fine SAND, moist, loose, wet at 8'	0.4
8	1028186	75		Dark brown, fine SAND, trace Silt, trace organic matter, wet, loose	2.5
	1028187	75		Greyish brown, fine to medium SAND, wet, loose	60
12	1028188	80		Top 8": Yellowish brown, fine to medium SAND, wet, loose; Bottom 1': Grey, CLAY, wet, loose, dark brown staining at sand/clay interface	0.4
	1028189	80		Grey, CLAY, wet, loose	0
16				Bottom of Boring at 16'	
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-274

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/13/97 **End Date** 03/13/97	**Boring ID** **NK-SB-275**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028193	75		Top 2": Organic debris; Middle 6": Light brown, fine SAND, little Silt, dry, loose; Bottom 10": Dark yellowish brown, fine SAND, trace fine and coarse process stone Gravel, dry, loose	0
	1028194	75		Same as last 10": moist 3-4'	0.3
4	1028195 1028197	75		Dark yellowish brown, fine SAND, trace(-) organic matter, moist, loose	0
	1028196	75		Dark brown, fine SAND, trace Silt, trace medium Sand, wet, loose	0.2
8	1028198	80		As Above, trace organic matter, Cobble at 9'	0
	1028199	80		Greyish brown, fine to medium SAND, wet, loose, grading into yellowish brown, fine SAND	0.6
12	1028200	100		Top 8": Yellowish brown, fine SAND, wet, loose; Bottom 14": Yellowish brown, medium to fine SAND, wet, loose	10
	1028201	100		Grey, varved CLAY, wet, loose, reddish brown staining at Sand/Clay interface	0.2
16				Bottom of Boring at 16'	
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-275

LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/13/97 **End Date** 03/13/97	**Boring ID** **NK-SB-276**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028202	100		Top 6": Organic debris; Middle 10": Light brown, fine SAND, trace(-) medium Sand, dry, loose; Bottom 8": Yellowish brown, fine SAND, trace coal and cinders, dry, loose	0
	1028203	100		Yellowish brown, fine SAND, trace coal and cinders, moist, loose	0
4	1028204	50		Dark brown, fine SAND, trace coal and cinders, Cobbles at 5- 6', moist, loose, wet at 5'	0.4
	1028205	50		Top 6": Dark brown, fine SAND, trace medium Sand, wet, loose, coal and cinders; Bottom 6": Greyish brown, fine to medium SAND, wet, loose	0
8	1028206	40		Greyish brown, medium to fine SAND, wet, loose	0
	1028207	40		As Above, CLAY in tip	0
12				Bottom of Boring at 12'	
16					
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/6/1998

Boring No: NK-SB-276

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/13/97 **End Date** 03/13/97	**Boring ID** **NK-SB-277**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028208	90		Top 3": Organic debris; Bottom 18": Yellowish brown to dark yellowish brown, fine SAND, trace fine and coarse Gravel (process stone), dry, loose; 2" layer of light brown, fine to medium SAND at 1.2'	0
	1028209	90		Dark yellowish brown, fine SAND, trace fine and coarse Gravel (process stone), moist, loose, petroleum odor	1.0
4	1028210	25		Dark yellowish brown, fine SAND, moist, loose, petroleum odor	1.0
	1028211	25		Dark brown, fine SAND, trace(-) fine Gravel, wet, loose; strong petroleum odor	210
8	1028212	75		Top 6": Dark brown, fine SAND, trace(+) Silt, wet, loose; Bottom 1': Greyish brown, fine to medium SAND, wet, loose	200
	1028213	75		Top 1.2': Greyish brown, fine to medium SAND, grading to yellowish brown, medium to fine SAND, wet, loose; Bottom 6": Grey, varved CLAY, wet, loose	7.0
12				Bottom of Boring at 12'	
16					
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/6/1998

Boring No: NK-SB-277

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/13/97 **End Date** 03/13/97	**Boring ID** **NK-SB-278**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028214	90		Top 8": Dark brown, fine SAND, some Silt, trace organic matter, dry, loose; Bottom 1.2': Light brown, fine SAND, dry, loose	0
	1028215	90		Dark yellowish brown, fine SAND, trace(-) fine Gravel, moist, loose	0.2
4	1028216	60		Dark yellowish brown, fine SAND, moist, loose	0
	1028217	60		Dark yellowish brown, fine SAND, little medium Sand, wet, loose	60
8	1028218	90		Dark brown, fine SAND, trace Silt, wet, loose, petroleum odor	300
	1025219	90		Greyish brown, fine to medium SAND, grading to yellowish brown, medium to fine SAND, trace coarse Sand, wet, loose; Bottom 6": Grey, varved CLAY, wet, loose	35
12				Bottom of Boring at 12.5'	
16					
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/2/1998

Boring No: NK-SB-278

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/13/97 **End Date** 03/13/97	**Boring ID** **NK-SB-279**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028220	100		Top 8": Light brown, fine SAND, trace organic matter, dry, loose; Bottom 1.2': Yellowish brown, fine SAND, dry, loose	0
	1028221	100		Yellowish brown, fine SAND, moist, loose	0
4	1028222	75		As Above	0
	1028223	75		Top 6": As Above; Bottom 1': Dark brown, fine SAND, trace Silt, wet, loose, petroleum odor	275
8	1028224	60		As above last 1'; Bottom 2": Black, sapric organic matter	>1000
	1028225	60		Greyish brown, fine to medium SAND, trace coarse Sand, wet, loose	>1000
12	1028226	75		Top 8": Yellowish brown, medium to fine SAND, trace coarse Sand, wet, loose; Bottom 10": Grey, varved CLAY, wet, loose	0
	1028227	75		Same as last 10" above	0
16				Bottom of Boring at 16'	
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-279

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/14/97 **End Date** 03/14/97	**Boring ID** **NK-SB-280**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028230	100		Top 8": Light yellowish brown, fine SAND, trace organic matter, micaceous, dry, loose; Bottom 40": Light brown, fine SAND, micaceous, moist, loose	0.8
	1028231	100		Top 5": Same as last 40", petroleum odor; Middle 4": Dark brown, fine SAND, trace Silt, wet, loose, strong petroleum odor; Bottom 39": Dark yellowish brown, fine SAND, moist, loose	68
4	1028232	75		Dark yellowish brown, fine SAND, Cobble at 5', moist, loose, petroleum odor	10
	1028233	75		Dark brown, fine SAND, moist, loose, strong petroleum odor	8.0
8	1028234	88		Dark brown, fine SAND, trace Silt, wet, loose, wet at 8', slight petroleum odor; Bottom 6": Dark brown, fine SAND and black sapric organic matter, wet, loose	>1000
	1028235	88		Greyish brown, fine to medium SAND, wet, trace(-) coarse Sand, loose	100
12	1028236	83		Top 1': Greyish brown, medium SAND, trace(+) coarse Sand, wet, loose; Bottom 8": Grey, varved CLAY, wet, loose	0.4
	1028237	83		Grey, varved CLAY, wet, loose	1.6
16				Bottom of Boring at 16'	
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-280

LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/14/97 **End Date** 03/14/97	**Boring ID** **NK-SB-281**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: 5.6' **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028238	62		Light brown, fine SAND, some fine and coarse Gravel (process stone), dry, loose, Black bituminous asphalt last 3"	1.4
	1028239	62		Yellowish brown, fine SAND, trace(-) coarse Gravel (process stone) moist, loose, Black bituminous asphalt first 2"	NR
4	1028240 1028242	83 83		Dark yellowish brown, fine SAND, little organic matter, trace medium Sand, wet at 10"	4.6
	1028241			Top 6": As Above; Middle 3": Light yellowish brown, fine to medium SAND, trace organic matter, wet, loose; Bottom 11": Greyish brown, fine to medium SAND, grading to medium fine Sand, wet, loose	1.2
8	1028243	58		Greyish brown, fine to medium SAND, grading to yellowish brown, medium to fine SAND, wet, loose	2.7
	1028244	58		Top 4": Yellowish brown, medium to fine SAND, trace(+) coarse Sand, wet, loose; Bottom 10": Grey, varved CLAY, wet, loose	1.4
12				Bottom of Boring at 12'	
16					
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-281

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/14/97 **End Date** 03/14/97	**Boring ID** **NK-SB-282**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028245	100		Top 2": Organic debris; Middle 8": Dark brown, fine SAND, trace(+) Silt, dry, loose, trace organic matter; Bottom 14": Yellowish brown, fine SAND, moist, loose	0.8
	1028246	100		Same as last 14"	0.9
4	1028247	79		Top 8": As Above, trace organic matter; Bottom 11": Dark brown, fine SAND, trace(+) Silt, rotting tree from 8-12", wet at 10"	70
	1028248	79		Top 8": As above bottom 11"; Bottom 11": Greyish brown, fine to medium SAND, wet, loose	40
8	1028249	67		Greyish brown, fine to medium SAND, trace(-) coarse Sand, wet, loose; stained reddish brown at 11-16"et, loose	2.8
	1028250	67		Top 8": Greyish brown, fine to medium SAND, trace(-) coarse Sand, wet, loose; Bottom 8": Grey, varved CLAY, wet, loose	2.8
12				Bottom of Boring at 12'	
16					
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-282

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/17/97 **End Date** 03/17/97	**Boring ID** **NK-SB-283**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028253	77		Dark yellowish brown, fine SAND, trace organic matter, trace(-) fine Gravel (process stone), dry, loose	0
	1028254	77		Dark yellowish brown, fine SAND, trace(-) organic matter, trace(-) fine and coarse Gravel (process stone), dry, loose	0
4	1028256	77		Dark yellowish brown, fine SAND, trace(-) organic matter, moist, loose, wet at 17"	0
	1028255 1028257	77		Top 11": As Above; Bottom 7": Dark brown, fine SAND, little Silt, trace organic matter, wet, loose	280
8	1028258	83		Greyish brown, fine to medium SAND, wet, loose	2.2
	1028259	83		Top 12": Greyish brown, fine to medium SAND, trace coarse Sand in last 5", wet, loose; Bottom 8": Grey, varved CLAY, wet, loose	6.4
12				Bottom of Boring at 12'	
16					
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-283

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/17/97 **End Date** 03/17/97	**Boring ID** **NK-SB-284**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: At: Hours
Depth: At: Hours

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028260	92		Dark yellowish brown, fine SAND, trace organic matter, dry, loose	0
	1028261	92		Yellowish brown, fine SAND, trace(-) fine Gravel (process stone), dry, loose, trace organic matter	0
4	1028262	67		Dark yellowish brown, fine SAND, trace(-) medium Sand, moist, loose	0
	1028263	67		Top 10": As Above, light brown; Bottom 6": Very dark brown to black, fine SAND, little Silt, wet, loose, wet at 6", slight petroleum odor	>1000
8	1028264	96		Dark brown to black, fine SAND, little Silt, little black, sapric organic matter, wet, loose, slight petroleum odor	100
	1028265	96		Top 3": As Above; Bottom 20": Greyish brown, medium to fine SAND (7"), grading to fine to medium SAND (8"), trace fine Gravel, trace coarse Sand in final 5", wet, loose	450
12	1028266	62		Top 6": Yellowish brown, medium SAND, little coarse Sand, trace fine Gravel, wet, loose; Bottom 9": Grey, varved CLAY, moist, loose	2.0
	1028267	62		Grey, varved CLAY, moist, loose	0.5
16				Bottom of Boring at 16'	
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-284

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/17/97 **End Date** 03/17/97	**Boring ID** **NK-SB-285**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028268	100		Dark yellowish brown, fine SAND, trace(-) medium Sand, trace organic matter, dry, loose	0
	1028269	100		Yellowish brown, fine SAND, trace(-) medium Sand, moist, loose; Last 3": Blue grey, coarse GRAVEL (process stone)	0
4	1028270	62		Yellowish brown, fine SAND, moist, loose	0
	1028271	62		Top 10": As Above, wet at 5"; Bottom 5": Dark yellowish brown, fine SAND, trace Silt, wet, loose	20
8	1028272	71		Dark brown, fine SAND, trace Silt, trace(-) medium Sand, trace black, sapric organic matter, wet, loose	>1000
	1028273	71		Dark greyish brown to greyish brown, medium to fine SAND (5") grading to fine to medium SAND (7") to medium to fine SAND (5"), trace coarse Sand, wet, loose	400
12	1028274	83		Top 5": Yellowish brown, medium SAND, little coarse Sand, trace fine Gravel, wet, loose; Bottom 15": Grey, varved CLAY, wet, loose	2.5
	1028275	83		Grey, varved CLAY, moist, loose	0.5
16				Bottom of Boring at 16'	
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-285

LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/18/97 **End Date** 03/18/97	**Boring ID** **NK-SB-286**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028280	96		Top 2": Dark brown, fine SAND to Silt, trace organic matter, dry, loose; Middle 10": Yellowish brown, fine SAND, trace medium Sand, dry, loose; Bottom 11": Dark yellowish brown, fine SAND, trace Silt, dry, loose, trace organic matter	0
	1028281	96		Top 3": Same as last 11"; Middle 10": Yellowish brown, fine SAND, trace medium Sand, moist, loose; Bottom 10": Dark yellowish brown, fine SAND, moist, loose, wood pieces at bottom	0
4	1028282	67		Dark yellowish brown fine SAND, trace Silt, trace organic matter, moist, loose; 1" layer: Light brown, fine to medium SAND at 5"; 2" layer: organic tree matter at 8"	1.0
	1028283	67		Top 4": Dark yellowish brown, fine SAND, trace Silt, moist, loose; Bottom 12": Yellowish brown, fine SAND, trace medium Sand, trace(-) coarse Sand, moist, loose	0
8	1028284	25		Black, bituminous asphalt, little dark brown, fine SAND, trace Silt, trace organic matter	NR
	1028285	25		Dark brown, fine to medium SAND, moist, loose	NR
12	1028286	88		Top 6": Greyish brown, medium to fine SAND, trace coarse Sand, wet, loose, wet at 0"; Bottom 15": Yellowish brown, medium to fine SAND, trace coarse Sand, wet, loose	9.0
	1028287	88		Top 4": Same as above bottom 15"; Bottom 17": Grey, varved CLAY, wet, loose	0
16				Bottom of Boring at 16'	
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-286

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/18/97 **End Date** 03/18/97	**Boring ID** **NK-SB-287**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028288	96		Top 2": Organic debris; Middle 1': Dark brown, fine SAND, trace Silt, little organic matter, dry, loose; Bottom 9": Yellowish brown, fine SAND, trace organic matter, dry, loose	0
	1028289	96		Top 18": Same as above last 9"; Bottom 5": Light brown, fine SAND, trace medium Sand, trace organic matter, dry, loose	0
4	1028290	75		Top 3": Dark yellowish brown, fine SAND, trace Silt, trace organic matter, moist, loose; Bottom 15": Brownish yellow, fine SAND, moist, loose	0
	1028291	75		Top 2": As Above; Middle 4": Dark yellowish brown, fine SAND, trace bituminous asphalt, moist, loose; Bottom 12": Same as top 2"	0
8	1028292 1028294	88		Top 14": Yellowish brown, fine to medium SAND, moist, loose; Bottom 7": Yellowish brown, medium to fine SAND, moist, loose	0
	1028293	88		Top 10": As Above last 7", wet at 3"; Bottom 11": Greyish brown, medium to fine SAND, trace coarse Sand, wet, loose	90
12	1028295	83		Top 13": Yellowish brown, medium to fine SAND, trace coarse Sand, trace(-) fine Gravel, wet, loose; Bottom 7": Grey, varved CLAY, wet, loose	3.0
	1028296	83		As Above last 7"	1.0
16				Bottom of Boring at 16'	
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-287

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/18/97 **End Date** 03/18/97	**Boring ID** **NK-SB-288**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028297	88		Top 2": Organic matter; Middle 1': Dark yellowish brown, fine SAND, trace Silt, little organic matter, dry, loose; Bottom 7": Yellowish brown, fine SAND, trace(-) process stone, fine and coarse Gravel, dry, loose	0
	1028298	88		As Above last 7"	0
4	1028299	88		Top 10": As Above, moist; Middle 5": Dark brown, fine SAND, trace Silt, trace organic matter, moist, loose; Bottom 6": Same as top 10"	0.5
	1028300	88		Top 5": As Above last 6"; Bottom 16": Yellowish brown, fine SAND grading to fine to medium SAND, wet, loose, wet at 17"	0
8	1028301	100		Yellowish brown to greyish brown, medium to fine SAND, trace(-) coarse Sand, wet, loose	80
	1028302			Top 1': As Above; Bottom 1': Grey, varved CLAY, moist to wet, loose	3.0
12				Bottom of Boring at 12'	
16					
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-288

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/18/97 **End Date** 03/18/97	**Boring ID** **NK-SB-289**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028303	79		Dark yellowish brown, fine SAND, trace Silt, trace organic matter, dry, loose	0
	1028304	79		Yellowish brown, fine SAND, trace organic matter, dry, loose	0
4	1028305	79		Top 17": As Above, moist; Bottom 2": Dark brown to black, SILT and fine SAND, moist, loose	0
	1028306	79		Top 3": Yellowish brown, fine SAND, moist, moderately dense; Middle 9": Dark brown to black, fine SAND, some Silt, little organic matter, moist, moderately dense; Bottom 5": Brownish yellow, fine SAND, trace medium Sand, moist moderately dense	0.5
8	1028307	96		Yellowish brown, very fine SAND (3") grading to fine SAND (10") grading to fine to medium SAND (10"), wet, loose, wet at 0'	0.5
	1028310	96		Yellowish brown, medium to fine SAND, trace coarse Sand, wet, loose, Clay at tip	90
12				Bottom of Boring at 12.5'	
16					
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-289

LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7051 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 03/18/97 **End Date** 03/18/97	**Boring ID** **NK-SB-290**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1028309	71		Dark yellowish brown, fine SAND, trace fine and coarse Gravel (at 14-17"), dry, loose	0
	1028308	71		Top 7": Dark yellowish brown, fine SAND, dry, loose; Middle 3": Black, bituminous asphalt; Bottom 7": Same as Top 7", trace brick fragments	0
4	1028311	29		Yellowish brown, fine SAND, moist, loose	0
	1028312	29		Top 3": As Above; Bottom 4": Tree fragment	NR
8	1028313	88		Top 6": Yellowish brown, fine SAND, wet, loose; Bottom 15": Yellowish brown, fine to medium SAND, wet, loose	15
	1028314	88		Top 16": As Above last 15"; Bottom 5": Greyish brown, medium to fine SAND, trace coarse Sand, wet, loose	100
12	1028315	96		Top 2": As Above last 5"; Bottom 21": Grey, varved CLAY, wet, loose	1.0
	1028316	96		Grey, vared CLAY, wet, loose	1.0
16				Bottom of Boring at 16'	
20					
24					

Comments: Hole backfilled with bentonite chips

Printed On: 2/16/1998

Boring No: NK-SB-290

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7075 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06/05/97 **End Date** 06/05/97	**Boring ID** **NK-SB-310**

Drilling Contractor: LEA
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observations:
Depth: N/R **At:** **Hours**
Depth: **At:** **Hours**

Logged By: B. Tomicic
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634657	88		Top 6": Organic debris; Middle 10": Light brown, fine SAND, dry, loose, trace(-) medium Sand; Bottom 8": Yellowish brown, fine SAND, trace coal and cinders, dry, loose	1.4
	1634658 1634659			Yellowish brown, fine SAND, trace coal and cinders, moist, loose	0.2
4	1634660	50		Top 6": Dark brown, fine SAND, trace medium Sand, wet, loose, coal and cinders; Bottom 6": Greyish brown, fine to medium SAND, wet, loose	0.2
	1634661			Greyish brown, medium to fine SAND, wet, loose	2.0
8	1634662	69		As Above, CLAY in tip	2.0
	1634663			Bottom of Boring at 12'	2.2
12				Bottom of Boring at 12'	
16					
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 2/2/1998

Boring No: NK-SB-310

LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7075 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06/05/97 **End Date** 06/05/97	**Boring ID** **NK-SB-311**

Drilling Contractor: LEA
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observations:
Depth: N/R **At:** **Hours**
Depth: **At:** **Hours**

Logged By: B. Tomicic
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634664	88		Top 3": Organic debris; Bottom 18": Yellowish brown to fdark yellowish brown, fine SAND, trace fine and coarse Gravel (process stone), dry, loose; 2" layer of light brown, fine to medium SAND at 1.2'	0.2
	1634665			Dark yellowish brown, fine SAND, trace fine and coarse Gravel (process stone), moist, loose, petroleum odor	6.0
4	1634666	62		Dark yellowish brown, fine SAND, moist, loose, petroleum odor	7.2
	1634667			Dark brown, fine SAND, trace(-) fine Gravel, wet, loose; strong petroleum odor	60.2
8	1634668	79		Top 6": Dark brown, fine SAND, trace(+) Silt, wet, loose; Bottom 1': Greyish brown, fine to medium SAND, wet, loose	80.0
	1634669			Top 1.2': Greyish brown, fine to medium SAND, grading to yellowish brown, medium to fine SAND, wet, loose; Bottom 6": Grey, varved CLAY, wet, loose	0.0
12				Bottom of Boring at 12'	
16					
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion.

Printed On: 2/2/1998

Boring No: NK-SB-311

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7075 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06/05/97 **End Date** 06/05/97	**Boring ID** **NK-SB-312**

Drilling Contractor: LEA
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observations:
Depth: N/R **At:** **Hours**
Depth: **At:** **Hours**

Logged By: B. Tomicic
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634670	88		Top 8": Dark brown, fine SAND, some Silt, trace organic matter, dry, loose; Bottom 1.2': Light brown, fine SAND, dry, loose	0.4
	1634671			Dark yellowish brown, fine SAND, trace(-) fine Gravel, moist, loose	0.2
4	1634672	46		Dark yellowish brown, fine SAND, moist, loose	0.4
	1634673			Dark yellowish brown, fine SAND, little medium Sand, wet, loose	10.0
8	1634674	67		Dark brown, fine SAND, trace Silt, wet, loose, petroleum odor	22.0
	1634675			Greyish brown, fine to medium SAND, grading to yellowish brown, medium to fine SAND, trace coarse Sand, wet, loose; Bottom 6": Grey, varved CLAY, wet, loose	7.2
12				Bottom of Boring at 12'	
16					
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 2/2/1998

Boring No: NK-SB-312

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7075 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06/05/97 **End Date** 06/05/97	**Boring ID** **NK-SB-313**

Drilling Contractor: LEA
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observations:
Depth: N/R **At:** **Hours**
Depth: **At:** **Hours**

Logged By: B. Tomicic
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634676	92		Top 8": Light brown, fine SAND, trace organic matter, dry, loose; Bottom 1.2': Yellowish brown, fine SAND, dry, loose	0.2
	1634677	92		Yellowish brown, fine SAND, moist, loose	0.2
4	1634678	54		As Above	2.0
	1634679	54		Top 6": As Above; Bottom 1': Dark brown, fine SAND, trace Silt, petroleum odor, wet, loose	90.0
8	1634680	4		Same as last 1' above; Bottom 2": Black, sapric organic matter	500.0
	1634681	4		Greyish brown, fine to medium SAND, trace coarse Sand, wet, loose	22.0
12	1634682	50		Top 8": Yellowish brown, medium to fine SAND, trace coarse Sand, wet, loose; Bottom 10": Grey, varved CLAY, wet, loose	4.0
				No Recovery; CLAY at 14'	
16				Bottom of Boring at 16'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 2/16/1998

Boring No: NK-SB-313

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7075 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06/05/97 **End Date** 06/05/97	**Boring ID** **NK-SB-314**

Drilling Contractor: LEA
Drilling Method: Direct Push
Sampling Method: Macro Core
Groundwater Observations:
Depth: N/R **At:** **Hours**
Depth: **At:** **Hours**

Logged By: B. Tomicic
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634683	96		Top 8": Light yellowish brown, fine SAND, trace organic matter, micaceous, dry, loose; Bottom 40": Light brown, fine SAND, micaceous, moist, loose	0.0
	1634684	96		Top 5": Same as last 40", petroleum odor; Middle 4": Dark brown, fine SAND, trace Silt, wet, loose, strong petroleum odor; Bottom 39": Drk yellowish brown, fine SANd, moist, loose	5.0
4	1634685	50		Dark yellowish brown, fine SAND, Cobble at 5', moist, loose, petroleum odor	6.0
	1634686	50		Dark brown, fine SAND, moist, loose, strong petroleum odor	4.0
8	1634687	83		Dark brown, fine SAND, trace Silt, wet, loose, wet at 8', slight petrtoleum odor; Bottom 6": Dark brown, fine SAND and black sapric organic matter, wet, loose	70.0
	1634688	83		Greyish brown, fine to medium SAND, wet, trace(-) coarse Sand, loose	40.0
12	1634689	83		Top 1': Greyish brown, medium SAND, trace(+) coarse Sand, wet, loose; Bottom 8": Grey, varved CLAY, wet, loose	0.4
16				Bottom of Boring at 14'	
20					
24					

Comments: Borehole backfilled with bentonite chips upon completion

Printed On: 2/6/1998

Boring No: NK-SB-314

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: Add. Investigation NK Soil Piles **LEA Comm No:** 68V7075 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date** 06/06/97 **End Date** 06/06/97	**Boring ID** **NK-SB-319**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: **At:** **Hours**
Depth: **At:** **Hours**

Logged By: J. Trzaski
Drilling Foreman: D. Brisson
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity, Angularity, Sedimentary Structures, Density, Cohesiveness	(ppm)
0	1634694	54		Top 2": Organic debris; Middle 6": Light brown, fine SAND, little Silt, dry, loose; Bottom 10": Dark yellowish brown, fine SAND, trace fine to coarse process stone Gravel, dry, loose	0.0
	1634695	54		Same as last 10": moist 3-4'	4.0
4	1634696	50		Dark yellowish brown, fine SAND, trace(-) organic matter, moist, loose	6.4
	1634697 1634698	50		Dark brown, fine SAND, trace Silt, trace medium Sand, wet, loose	6.3
8	1634699	75		As Above, trace organic matter, Cobble at 9'	7.4
	1634700	75		Greyish brown, fine to medium SAND, wet, loose, grading into yellowish brown, fine SAND	7.1
12	1634701	79		Top 8": Yellowish brown, fine SAND, wet, loose; Bottom 14": Yellowish brown, medium to fine SAND, wet, loose	0.7
	1634702	79		Grey, varved CLAY, wet, loose, reddish brown staining at Sand/Clay interface	5.0
16				Bottom of Boring at 16'	
20					
24					

Comments: Boring backfilled with bentonite

Printed On: 2/6/1998

Boring No: NK-SB-319

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/ 9/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/ 9/1997	**NK-SB-320**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 8.00 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,007.4
Easting: 184,664.4

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634703			top 4" organic debris middle 6" dark brown fine SAND, little organic matter, dry, loose bottom 1' brown to orange brown fine SAND, dry, loose	18.0
2	1634704			brown to orange brown fine SAND, dry, loose. Cobble at 2'	12.8
4	1634705			brown to orange brown fine SAND, cobbles at 5', moist, loose	13.7
6	1634706			dark yellowsih brown fine SAND, moist, loose	13.9
8 ▽	1634707			dark brown fine SAND, trace SILT, trace organic matter, wet, loose	25
10	1634708			greyish brown fine to medium SAND, wet, loose	60
12	1634709			top 8" yellowish brown fine to medium SAND, wet, loose. dark brown staining at sand/clay contact bottom 1' grey CALY, wet, loose	0.4
14	1634710			grey CALY, wet, loose	0
16					

Comments:
This boring is a duplicate of NK-SB-274

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/ 9/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/ 9/1997	**NK-SB-321**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 8.00 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,044.8
Easting: 184,655.9

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634711			top 6" dark brown fine SAND, trace SILT, trace organic matter, dry, loose bottom 1.5' brown to orange brown fine SAND, trace organic matter, dry, loose	7.0
2	1634712			yellowish brown fine SAND, trace (-) fine GRAVEL, moist, loose	5.1
4	1634713			yellowish brown fine SAND, trace (-) medium SAND, trace (-) fine GRAVEL, moist, loose	4.8
6	1634714			yellowish brown fine SAND, trace (-) medium SAND, trace (-) fine GRAVEL, moist, loose	0.4
8 ▽	1634715			top 1' dark brown to brown fine SAND, trace organic matter, wet, loose bottom 0.5' greyish brown fine to medium SAND, wet, loose	6.0
10	1634716			greyish brown fine to medium SAND, mottling (dark brown) at 11' to 12', wet, loose	4.0
12	1634717			top 1.5' yellowsih brown fine to medium SAND, dark brown staining at clay to sand contact bottom 4" grey varved CLAY, wet, loose	0.6
14	1634718			grey varved CLAY, wet, loose	0.3
16					

Comments:
This boring is a duplicate of NK-SB-273

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/ 9/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/ 9/1997	**NK-SB-322**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 10.25 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 148,866.2
Easting: 184,589.3

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634719, 1634725			top 2" organic debris middle 1' dark brown fine SAND, trace SILT, little organic matter, dry, loose bottom 9" yellowish brown fine SAND, trace organic matter, dry, loose	0
2	1634720, 1634726			top 18" yellowish brown fine SAND, trace organic matter, dry, loose bottom 5" light brown fine SAND, trace medium SAND, trace organic matter, dry, loose	0
4	1634721, 1634727			top 3" dark yellowish brown fine SAND, trace SILT, trace organic matter, moist, loose bottom 15" brownish yellow fine SAND, moist, loose	0
6	1634722, 1634728			top 2" brownish yellow fine SAND, moist, loose middle 4" dark yellowish brown fine SAND, trace bituminous asphalt, moist, loose bottom 12" brownish yellow fine SAND, moist, loose	0
8	1634729			top 14" yellowsih brown fine to medium SAND, moist, loose bottom 7" yellowish brown medium to fine SAND, moist, loose	0.0
10 ▽	1634730			top 10" yellowish brown medium to fine SAND, moist, loose, wet at 3" bottom 11" greyish brown medium to fine SAND, trace coarse SAND, wet, loose	90
12	1634731			top 13" yellowish brown medium to fine SAND, trace coarse SAND, trace (-) fine GRAVEL, wet, loose bottom 7" grey varved CLAY, wet, loose	3.0
14	1634732			grey varved CLAY, wet, loose	1.0
16					

Comments:

This boring is a duplicate of NK-SB-287

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/10/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/10/1997	**NK-SB-323**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 12.00 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 148,905.0
Easting: 184,589.3

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634723			top 2" dark brown fine SAND, trace SILT, trace organic matter, dry, loose middle 10" yellowish brown fine SAND, trace medium SAND, dry, loose bottom 11" dark yellowish brown fine SAND, trace SILT, dry, loose, trace organic matter	0
2	1634724			top 3" dark yellowish brown fine SAND, trace SILT, dry, loose, trace organic matter middle 10" yellowish brown fine SAND, trace medium SAND, moist, loose bottom 10" dark yellowish brown fine SAND, moist, loose, wood pieces at bottom	0.9
4	1634734			dark yellowsih brown fine SAND, trace SILT, trace organic matter, most, loose 1" layer light brown fine to medium SAND at 5" 2" layer organic tree matter at 8"	0.7
6	1634735			top 4" dark yellowsih brown fine SAND, trace SILT, moist, loose bottom 12" yellowish brown fine SAND, trace medium SAND, trace (-) coarse SAND, moist, loose	0.8
8	1634736, 1634737			black bituminous asphalt, little dark brown fine SAND, trace SILT, trace organic matter	0.3
10	1634738			dark brown fine to medium SAND, moist, loose	
12 ▽	1634739			top 6" greyish brown medium to fine SAND, trace coarse SAND, wet, loose bottom 15" yellowish brown medium to fine SAND, trace coase SAND, wet, loose	0.0
14	1634740			top 4" yellowish brown medium to fine SAND, trace coarse SAND, wet, loose bottom 17" grey varved CLAY, wet, loose	0.1
16					

Comments:

This boring is a duplicate of NK-SB-286

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: Southington ORC Quarterly Sampling	**Start Date** 6/10/1997	**Boring ID**
LEA Commission Number: 68V8128.		
Client:	**End Date** 6/10/1997	**NK-SB-324**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 6.4 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 148,942.6
Easting: 184,593.7

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634741			dark yellowish brown fine SAND, trace (-) medium SAND, trace organic matter, dry, loos	0
2	1634742			yellowish brown fine SAND, trace (-) medium SAND, moist, loose last 3" blue grey coarse GRAVEL (process stone)	1.7
4	1634743			yellowish brown fine SAND, moist, loose	3.6
6 ▽	1634744			top 10" yellowish brown fine SAND, moist, loose, wet at 5" bottom 5" dark yellowish borwn fine SAND, trace SILT, wet, loose	2.5
8	1634745			dark brown fine SAND, trace SILT, trace (-) medium SAND, trace black sapric organic matter, wet, loose	>1000
10	1634746			dark greyish brown to greyish brown medium to fine SAND, grading to fine to medium SAND (7") (5"), grading to medium to fine SAND, trace coarse SAND, wet, loose (5")	400
12	1634747			top 5" yellowish brown medium SAND, little coarse SAND, trace fine GRAVEL, wet, loose bottom 15" grey varved CLAY, wet, loose	2.5
14	1634748			grey varved CLAY, moist, loose	0.5
16					

Comments:
This boring is a duplicate of NK-SB-285
discarded by direction of Margaret Averill

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/ 9/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/ 9/1997	**NK-SB-320**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 8.00 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,007.4
Easting: 184,664.4

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634703			top 4" organic debris middle 6" dark brown fine SAND, little organic matter, dry, loose bottom 1' brown to orange brown fine SAND, dry, loose	18.0
2	1634704			brown to orange brown fine SAND, dry, loose. Cobble at 2'	12.8
4	1634705			brown to orange brown fine SAND, cobbles at 5', moist, loose	13.7
6	1634706			dark yellowsih brown fine SAND, moist, loose	13.9
8 ▽	1634707			dark brown fine SAND, trace SILT, trace organic matter, wet, loose	25
10	1634708			greyish brown fine to medium SAND, wet, loose	60
12	1634709			top 8" yellowish brown fine to medium SAND, wet, loose. dark brown staining at sand/clay contact bottom 1' grey CALY, wet, loose	0.4
14	1634710			grey CALY, wet, loose	0
16					

Comments:

This boring is a duplicate of NK-SB-274

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/ 9/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/ 9/1997	**NK-SB-321**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 8.00 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,044.8
Easting: 184,655.9

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634711			top 6" dark brown fine SAND, trace SILT, trace organic matter, dry, loose bottom 1.5' brown to orange brown fine SAND, trace organic matter, dry, loose	7.0
2	1634712			yellowish brown fine SAND, trace (-) fine GRAVEL, moist, loose	5.1
4	1634713			yellowish brown fine SAND, trace (-) medium SAND, trace (-) fine GRAVEL, moist, loose	4.8
6	1634714			yellowish brown fine SAND, trace (-) medium SAND, trace (-) fine GRAVEL, moist, loose	0.4
8 ▽	1634715			top 1' dark brown to brown fine SAND, trace organic matter, wet, loose bottom 0.5' greyish brown fine to medium SAND, wet, loose	6.0
10	1634716			greyish brown fine to medium SAND, mottling (dark brown) at 11' to 12', wet, loose	4.0
12	1634717			top 1.5' yellowsih brown fine to medium SAND, dark brown staining at clay to sand contact bottom 4" grey varved CLAY, wet, loose	0.6
14	1634718			grey varved CLAY, wet, loose	0.3
16					

Comments:
This boring is a duplicate of NK-SB-273

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/ 9/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/ 9/1997	**NK-SB-322**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 10.25 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 148,866.2
Easting: 184,589.3

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634719, 1634725			top 2" organic debris middle 1' dark brown fine SAND, trace SILT, little organic matter, dry, loose bottom 9" yellowish brown fine SAND, trace organic matter, dry, loose	0
2	1634720, 1634726			top 18" yellowish brown fine SAND, trace organic matter, dry, loose bottom 5" light brown fine SAND, trace medium SAND, trace organic matter, dry, loose	0
4	1634721, 1634727			top 3" dark yellowish brown fine SAND, trace SILT, trace organic matter, moist, loose bottom 15" brownish yellow fine SAND, moist, loose	0
6	1634722, 1634728			top 2" brownish yellow fine SAND, moist, loose middle 4" dark yellowish brown fine SAND, trace bituminous asphalt, moist, loose bottom 12" brownish yellow fine SAND, moist, loose	0
8	1634729			top 14" yellowsih brown fine to medium SAND, moist, loose bottom 7" yellowish brown medium to fine SAND, moist, loose	0.0
10 ▽	1634730			top 10" yellowish brown medium to fine SAND, moist, loose, wet at 3" bottom 11" greyish brown medium to fine SAND, trace coarse SAND, wet, loose	90
12	1634731			top 13" yellowish brown medium to fine SAND, trace coarse SAND, trace (-) fine GRAVEL, wet, loose bottom 7" grey varved CLAY, wet, loose	3.0
14	1634732			grey varved CLAY, wet, loose	1.0
16					

Comments:

This boring is a duplicate of NK-SB-287

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/10/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/10/1997	**NK-SB-323**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 12.00 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 148,905.0
Easting: 184,589.3

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634723			top 2" dark brown fine SAND, trace SILT, trace organic matter, dry, loose middle 10" yellowish brown fine SAND, trace medium SAND, dry, loose bottom 11" dark yellowish brown fine SAND, trace SILT, dry, loose, trace organic matter	0
2	1634724			top 3" dark yellowish brown fine SAND, trace SILT, dry, loose, trace organic matter middle 10" yellowish brown fine SAND, trace medium SAND, moist, loose bottom 10" dark yellowish brown fine SAND, moist, loose, wood pieces at bottom	0.9
4	1634734			dark yellowsih brown fine SAND, trace SILT, trace organic matter, most, loose 1" layer light brown fine to medium SAND at 5" 2" layer organic tree matter at 8"	0.7
6	1634735			top 4" dark yellowsih brown fine SAND, trace SILT, moist, loose bottom 12" yellowish brown fine SAND, trace medium SAND, trace (-) coarse SAND, moist, loose	0.8
8	1634736, 1634737			black bituminous asphalt, little dark brown fine SAND, trace SILT, trace organic matter	0.3
10	1634738			dark brown fine to medium SAND, moist, loose	
12 ▽	1634739			top 6" greyish brown medium to fine SAND, trace coarse SAND, wet, loose bottom 15" yellowish brown medium to fine SAND, trace coase SAND, wet, loose	0.0
14	1634740			top 4" yellowish brown medium to fine SAND, trace coarse SAND, wet, loose bottom 17" grey varved CLAY, wet, loose	0.1
16					

Comments:

This boring is a duplicate of NK-SB-286

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: Southington ORC Quarterly Sampling	**Start Date** 6/10/1997	**Boring ID**
LEA Commission Number: 68V8128.		
Client:	**End Date** 6/10/1997	**NK-SB-324**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 6.4 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 148,942.6
Easting: 184,593.7

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634741			dark yellowish brown fine SAND, trace (-) medium SAND, trace organic matter, dry, loos	0
2	1634742			yellowish brown fine SAND, trace (-) medium SAND, moist, loose last 3" blue grey coarse GRAVEL (process stone)	1.7
4	1634743			yellowish brown fine SAND, moist, loose	3.6
6 ▽	1634744			top 10" yellowish brown fine SAND, moist, loose, wet at 5" bottom 5" dark yellowish borwn fine SAND, trace SILT, wet, loose	2.5
8	1634745			dark brown fine SAND, trace SILT, trace (-) medium SAND, trace black sapric organic matter, wet, loose	>1000
10	1634746			dark greyish brown to greyish brown medium to fine SAND, grading to fine to medium SAND (7") (5"), grading to medium to fine SAND, trace coarse SAND, wet, loose (5")	400
12	1634747			top 5" yellowish brown medium SAND, little coarse SAND, trace fine GRAVEL, wet, loose bottom 15" grey varved CLAY, wet, loose	2.5
14	1634748			grey varved CLAY, moist, loose	0.5
16					

Comments:
This boring is a duplicate of NK-SB-285
discarded by direction of Margaret Averill

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/10/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/10/1997	**NK-SB-325**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 6.50 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 148,972.7
Easting: 184,589.6

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634749			dark yellowsih brown fine SAND, trace organic matter, dry, loose	0
2	1634750			yellowish brown fine SAND, trace (-) fine GRAVEL (process stone), trace organic matter, dry, loose	2.3
4	1634751			dark yellowish brown fine SAND, trace (-) medium SAND, moist, loose	1.4
6 ▽	1634752			top 10" light brown fine SAND, trace (-) medium SAND, moist, loose bottom 6" very dark brown to black fine SAND, little SILT, wet, loose, wet at 6", slight petrol odour	2.5
8	1634753			dark brown to black fine SAND, little SILT, little black sapric orgnic matter, wet, loose, slight petrol odour	2.0
10	1634754			top 3" dark brown to black fine SAND, little SILT, little black sapric orgnic matter, wet, loose, slight petrol odour bottom 20" greyish brown medium to fine SAND, grading to fine to medium SAND, grading to medium to fine SAND, trace fine GRAVEL, trace coarse SAND in final 5", wet, loose	450
12	1634755			top 6" yellowsih brown medium SAND, little coarse SAND, trace fine GRAVEL, wet, loose bottom 9" grey varved CLAY, moist, loose	2.0
14	1634756			grey barved CLAY, moist, loose	1.4
16					

Comments:
This boring is a duplicate of NK-SB-284

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: Southington ORC Quarterly Sampling	**Start Date** 6/10/1997	**Boring ID**
LEA Commission Number: 68V8128.		
Client:	**End Date** 6/10/1997	**NK-SB-326**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 5.4 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,000.5
Easting: 184,583.6

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634757			dark yellowish brown fine SAND, trace organic matter, trace (-) fine GRAVEL (process stone), dry, loose	1.3
2	1634758			dark yellowsih brown fine SAND, trace (-) organic matter, trace (-) fine to coarse GRAVEL (process stone), dry, loose	1.2
4 ▽	1634759			dark yellowish brown fine SAND, trace (-) organic matter, moist, loose, wet at 17"	1.0
6	1634760			top 11" dark yellowish brown fine SAND, trace (-) organic matter, moist, loose bottom 7" dark brown fine SAND, little SILT, trace organic matter, wet, loose	0.7
8	1634761			greyish brown fine to medium SAND, wet, loose	2.2
10	1634762			top 12" greyish brown fine to medium SAND, trace coarse SAND in last 5", wet, loose bottom 8" grey varved CLAY, wet, loose	6.4
12					

Comments:
This boring is a duplicate of NK-SB-283
discarded by direction of Margaret Averill

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/11/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/11/1997	**NK-SB-327**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 8.00 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 148,936.6
Easting: 184,551.1

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634765			dark yellowish brown fine SAND, trace fine to coarse GRAVEL at 14" to 17", dry, loose	0
2	1634766			top 7" dark yellowish brown fine SAND, dry, loose middle 3" black bituminous asphalt bottom 7" dark yellowish brown fine SAND, trace brick fragments, dry, loose	90
4	1634767			yellowish brown fine SAND, moist, loose	2.5
6	1634768			top 3" yellowish brown fine SAND, moist, loose bottom 4" tree fragment	
8 ▽	1634769, 1634770			top 6" yellowish brown fine SAND, wet, loose bottom 15" yellowish brown fine to medium SAND, wet, loose	15
10	1634771			top 16" yellowish brown fine to medium SAND, wet, loose bottom 5" greyish brown medium to fine SAND, trace coarse SAND, wet, loose	100
12	1634772			top 2" greyish brown medium to fine SAND, trace coarse SAND, wet, loose bottom 21" grey varved CLAY, wet, loose	1.0
14	1634773			grey varved CLAY, wet, loose	1.0
16					

Comments:

This boring is a duplicate of NK-SB-290

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/11/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/11/1997	**NK-SB-328**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 8.00 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 148,969.2
Easting: 184,548.8

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634774			dark yellowish brown fine SAND, trace SILT, trace organic matter, dry, loose	0
2	1634775			yellowish brown fine SAND, dry, loose, trace organic matter	10.2
4	1634776			top 17" yellowish brown fine SAND, moist, loose, trace organic matter bottom 2" dark brown to black SILT and fine SAND, moist, loose	3.2
6	1634777			top 3" yellowish brown fine SAND, moist, medium dense middle 9" dark brown to black fine SAND, some SILT, little organic matter, moist, medium dense bottom 5" brownish yellow fine SAND, trace medium SAND, moist, medium dense	1.4
8 ▽	1634778			top 3" yellowish brown very fine SAND, wet, loose next 10" yellowish brown fine SAND, wet, loose bottom 10" yellowish brown fine to medium SAND, wet, loose	0.5
10	1634779			yellowish brown medium to fine SAND, trace coarse SAND, wet, loose CLAY at tip	0
12					

Comments:

This boring is a duplicate of NK-SB-289

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/11/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/11/1997	**NK-SB-329**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 7.42 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,000.9
Easting: 184,562.4

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634780			top 2" organic matter middle 1' dark yellowish brown fine SAND, trace SILT, little organic matter, dry, loose bottom 7" yellowish brown fine SAND, trace (-) process stone fine and coarse GRAVEL, dry, loose	0
2	1634781			yellowish brown fine SAND, trace (-) process stone fine and coarse GRAVEL, dry, loose	2.4
4	1634782			top 10" yellowish brown fine SAND, trace (-) process stone fine and coarse GRAVEL, moist, loose middle 5" dark brown fine SAND, trace SILT, trace organic matter, moist, loose bottom 6" yellowish brown fine SAND, trace (-) process stone fine and coarse GRAVEL, moist, loose	0.8
6 ▽	1634783			top 5" yellowish brown fine SAND, trace (-) process stone fine and coarse GRAVEL, moist, loose bottom 16" yellowish brown fine SAND, grading to fine to medium SAND, wet, loose, wet at 17"	0
8	1634784			yellowish brown to greyish brown medium to fine SAND, trace (-) coarse SAND, wet, loose	2.3
10	1634785			top 1' yellowish brown to greyish brown medium to fine SAND, trace (-) coarse SAND, wet, loose bottom 1' grey varved CLAY, moist to wet, loose	1.5
12					

Comments:

This boring is a duplicate of NK-SB-288

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/12/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/12/1997	**NK-SB-330**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 4.83 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: Boris Tomicic
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,078.7
Easting: 184,569.6

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634884			top 8" organic debris middle 8" dark brown fine SAND, trace (+) SILT, dry, loose, trace organinc matter bottom 14" yellowish brown fine SAND, moist, loose	0.8
2	1634786			yellowish brown fine SAND, moist, loose	0.9
4 ▽	1634787, 1634788			top 8" yellowish brown fine SAND, moist, loose bottom 11" dark brown fine SAND, trace (+) SILT, rotting tree from 8" to 12", wet at 10"	70
6	1634789			top 8" dark brown fine SAND, trace (+) SILT bottom 11" greyish brown fine to medium SAND, wet, loose	40
8	1634790			greyish brown fine to medium SAND, wet, loose stained reddish brown at 11" to 16"	30
10	1634791			top 8" greyish brown fine to medium SAND, trace (-) coarse SAND, wet, loose bottom 8" grey varved CLAY, wet, loose	2.8
12					

Comments:
This boring is a duplicate of NK-SB-282

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/12/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/12/1997	**NK-SB-331**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 4.83 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: Boris Tomicic
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,126.4
Easting: 184,557.8

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634792			lisght brown fine SAND, some fine and coarse process stone GRAVEL, dry, loose black bituminous asphalt last 3"	1.4
2	1634793			top 2" bituminous asphalt remainder yellowish brown fine SAND, trace (-) coarse process stone GRAVEL, moist, loose	
4 ▽	1634794			dark yellowsih brown fine SAND, trace medium SAND, little organic matter, wet at 10" [sic]	0.0
6	1634795			top 6" dark yellowsih brown fine SAND, trace medium SAND, little organic matter, wet at 10" [sic] middle 3" light yelloish brown fine to medium SAND, trace organic matter, wet, loose bottom 11" greyish browm fine to medium SAND grading to medium to fine SAND, wet, loose	1.2
8	1634796			greyish brown fine to medium SAND, grading to yellowish brown medium to fine SAND, wet, loose	2.7
10	1634797			top 4" yellowish brown medium to fine SAND, trace (+) vcoarse SAND, wet, loose bottom 10" grey varved CLAY, wet, loose	1.4
12					

Comments:

This boring is a duplicate of NK-SB-281

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/12/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/12/1997	**NK-SB-332**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 4.00 **at:** 11:35 ▽
Depth: **at:** **Hours** ▼

Logged by: Boris Tomicic
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,042.2
Easting: 184,654.7

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634798			top 2" organic debris middle 8" dark brown fine SAND, trace SILT, little organic matter bottom 1' brownish yellow fine SAND, trace SILT, trace organic matter matter, moist, loose	0
2	1634799			top 6" yellowish brown fine SAND, trace organic matter, moist, loose bottom 1.5' dark brown fine SAND, trace SILT, trace organic matter, moist, loose	0
4 ▽	1634800			top 8" dark brown fine to medium SAND, wet, loose, orange mottling t 5' to 6' bottom 1' brown fine to medium SAND	0.2
6	1634801			top 6" brown fine to medium SAND with dark brown mottling, wet, loose bottom 1' yellowish brown mdium SAND, wet, loose	80.0
8	1634802			top 8" greyish brown fine to medium SAND, trace coarse SAND, wet, loose bottom 6" yellowish brown fine to medium SAND, trace coarse SAND, wet, loose	0.4
10	1634803			top 8" yellowsih brown fine to medium SAND, dark brown staining at sand to clay contact bottom 6" grey CLAY, wet, loose	0.2
12					

Comments:

This boring is a duplicate of NK-SB-272

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: Southington ORC Quarterly Sampling	**Start Date** 6/10/1997	**Boring ID**
LEA Commission Number: 68V8128.		
Client:	**End Date** 6/10/1997	**NK-SB-326**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 5.4 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,000.5
Easting: 184,583.6

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634757			dark yellowish brown fine SAND, trace organic matter, trace (-) fine GRAVEL (process stone), dry, loose	1.3
2	1634758			dark yellowsih brown fine SAND, trace (-) organic matter, trace (-) fine to coarse GRAVEL (process stone), dry, loose	1.2
4 ▽	1634759			dark yellowish brown fine SAND, trace (-) organic matter, moist, loose, wet at 17"	1.0
6	1634760			top 11" dark yellowish brown fine SAND, trace (-) organic matter, moist, loose bottom 7" dark brown fine SAND, little SILT, trace organic matter, wet, loose	0.7
8	1634761			greyish brown fine to medium SAND, wet, loose	2.2
10	1634762			top 12" greyish brown fine to medium SAND, trace coarse SAND in last 5", wet, loose bottom 8" grey varved CLAY, wet, loose	6.4
12					

Comments:
This boring is a duplicate of NK-SB-283
discarded by direction of Margaret Averill

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/11/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/11/1997	**NK-SB-327**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 8.00 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 148,936.6
Easting: 184,551.1

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634765			dark yellowish brown fine SAND, trace fine to coarse GRAVEL at 14" to 17", dry, loose	0
2	1634766			top 7" dark yellowish brown fine SAND, dry, loose middle 3" black bituminous asphalt bottom 7" dark yellowish brown fine SAND, trace brick fragments, dry, loose	90
4	1634767			yellowish brown fine SAND, moist, loose	2.5
6	1634768			top 3" yellowish brown fine SAND, moist, loose bottom 4" tree fragment	
8 ▽	1634769, 1634770			top 6" yellowish brown fine SAND, wet, loose bottom 15" yellowish brown fine to medium SAND, wet, loose	15
10	1634771			top 16" yellowish brown fine to medium SAND, wet, loose bottom 5" greyish brown medium to fine SAND, trace coarse SAND, wet, loose	100
12	1634772			top 2" greyish brown medium to fine SAND, trace coarse SAND, wet, loose bottom 21" grey varved CLAY, wet, loose	1.0
14	1634773			grey varved CLAY, wet, loose	1.0
16					

Comments:
This boring is a duplicate of NK-SB-290

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/11/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/11/1997	**NK-SB-328**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 8.00 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 148,969.2
Easting: 184,548.8

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634774			dark yellowish brown fine SAND, trace SILT, trace organic matter, dry, loose	0
2	1634775			yellowish brown fine SAND, dry, loose, trace organic matter	10.2
4	1634776			top 17" yellowish brown fine SAND, moist, loose, trace organic matter bottom 2" dark brown to black SILT and fine SAND, moist, loose	3.2
6	1634777			top 3" yellowish brown fine SAND, moist, medium dense middle 9" dark brown to black fine SAND, some SILT, little organic matter, moist, medium dense bottom 5" brownish yellow fine SAND, trace medium SAND, moist, medium dense	1.4
8 ▽	1634778			top 3" yellowish brown very fine SAND, wet, loose next 10" yellowish brown fine SAND, wet, loose bottom 10" yellowish brown fine to medium SAND, wet, loose	0.5
10	1634779			yellowish brown medium to fine SAND, trace coarse SAND, wet, loose CLAY at tip	0
12					

Comments:

This boring is a duplicate of NK-SB-289

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/11/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/11/1997	**NK-SB-329**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 7.42 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: jtraski
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,000.9
Easting: 184,562.4

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634780			top 2" organic matter middle 1' dark yellowish brown fine SAND, trace SILT, little organic matter, dry, loose bottom 7" yellowish brown fine SAND, trace (-) process stone fine and coarse GRAVEL, dry, loose	0
2	1634781			yellowish brown fine SAND, trace (-) process stone fine and coarse GRAVEL, dry, loose	2.4
4	1634782			top 10" yellowish brown fine SAND, trace (-) process stone fine and coarse GRAVEL, moist, loose middle 5" dark brown fine SAND, trace SILT, trace organic matter, moist, loose bottom 6" yellowish brown fine SAND, trace (-) process stone fine and coarse GRAVEL, moist, loose	0.8
6 ▽	1634783			top 5" yellowish brown fine SAND, trace (-) process stone fine and coarse GRAVEL, moist, loose bottom 16" yellowish brown fine SAND, grading to fine to medium SAND, wet, loose, wet at 17"	0
8	1634784			yellowish brown to greyish brown medium to fine SAND, trace (-) coarse SAND, wet, loose	2.3
10	1634785			top 1' yellowish brown to greyish brown medium to fine SAND, trace (-) coarse SAND, wet, loose bottom 1' grey varved CLAY, moist to wet, loose	1.5
12					

Comments:

This boring is a duplicate of NK-SB-288

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/12/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/12/1997	**NK-SB-330**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 4.83 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: Boris Tomicic
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,078.7
Easting: 184,569.6

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634884			top 8" organic debris middle 8" dark brown fine SAND, trace (+) SILT, dry, loose, trace organinc matter bottom 14" yellowish brown fine SAND, moist, loose	0.8
2	1634786			yellowish brown fine SAND, moist, loose	0.9
4 ▽	1634787, 1634788			top 8" yellowish brown fine SAND, moist, loose bottom 11" dark brown fine SAND, trace (+) SILT, rotting tree from 8" to 12", wet at 10"	70
6	1634789			top 8" dark brown fine SAND, trace (+) SILT bottom 11" greyish brown fine to medium SAND, wet, loose	40
8	1634790			greyish brown fine to medium SAND, wet, loose stained reddish brown at 11" to 16"	30
10	1634791			top 8" greyish brown fine to medium SAND, trace (-) coarse SAND, wet, loose bottom 8" grey varved CLAY, wet, loose	2.8
12					

Comments:

This boring is a duplicate of NK-SB-282

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/12/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/12/1997	**NK-SB-331**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 4.83 **at:** **Hours** ▽
Depth: **at:** **Hours** ▼

Logged by: Boris Tomicic
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,126.4
Easting: 184,557.8

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634792			lisght brown fine SAND, some fine and coarse process stone GRAVEL, dry, loose black bituminous asphalt last 3"	1.4
2	1634793			top 2" bituminous asphalt remainder yellowish brown fine SAND, trace (-) coarse process stone GRAVEL, moist, loose	
4 ▽	1634794			dark yellowsih brown fine SAND, trace medium SAND, little organic matter, wet at 10" [sic]	0.0
6	1634795			top 6" dark yellowsih brown fine SAND, trace medium SAND, little organic matter, wet at 10" [sic] middle 3" light yelloish brown fine to medium SAND, trace organic matter, wet, loose bottom 11" greyish browm fine to medium SAND grading to medium to fine SAND, wet, loose	1.2
8	1634796			greyish brown fine to medium SAND, grading to yellowish brown medium to fine SAND, wet, loose	2.7
10	1634797			top 4" yellowish brown medium to fine SAND, trace (+) vcoarse SAND, wet, loose bottom 10" grey varved CLAY, wet, loose	1.4
12					

Comments:
This boring is a duplicate of NK-SB-281

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

GEOLOGIC BORING LOG

Project: P&WEH UNDEV LAND: SOIL PILES	**Start Date** 6/12/1997	**Boring ID**
LEA Commission Number: 68V7075.		
Client: Pratt & Whitney East Hartford-RC	**End Date** 6/12/1997	**NK-SB-332**
Location: P&W East Hartford		

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observation
Depth: 4.00 **at:** 11:35 ▽
Depth: **at:** **Hours** ▼

Logged by: Boris Tomicic
Drilling Foreman:
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing: 149,042.2
Easting: 184,654.7

Depth	Sample Information			Soil Description	
	Sample No.	Recovery %	Blows /6"	Color, Primary Grain Size, Secondary Grain Sizes, Moisture, Sorting, Sphericity Angularity, Sedimentary Structure, Density, Cohesiveness, Other	PID/FID ppm
0	1634798			top 2" organic debris middle 8" dark brown fine SAND, trace SILT, little organic matter bottom 1' brownish yellow fine SAND, trace SILT, trace organic matter matter, moist, loose	0
2	1634799			top 6" yellowish brown fine SAND, trace organic matter, moist, loose bottom 1.5' dark brown fine SAND, trace SILT, trace organic matter, moist, loose	0
4 ▽	1634800			top 8" dark brown fine to medium SAND, wet, loose, orange mottling t 5' to 6' bottom 1' brown fine to medium SAND	0.2
6	1634801			top 6" brown fine to medium SAND with dark brown mottling, wet, loose bottom 1' yellowish brown mdium SAND, wet, loose	80.0
8	1634802			top 8" greyish brown fine to medium SAND, trace coarse SAND, wet, loose bottom 6" yellowish brown fine to medium SAND, trace coarse SAND, wet, loose	0.4
10	1634803			top 8" yellowsih brown fine to medium SAND, dark brown staining at sand to clay contact bottom 6" grey CLAY, wet, loose	0.2
12					

Comments:
This boring is a duplicate of NK-SB-272

LOUREIRO ENGINEERING ASSOCIATES, Inc.
100 Northwest Drive, Plainville, Connecticut 06062 Phone (860) 747-6181 Fax (860) 747-8822

APPENDIX C

Test Pit Logs

TEST PIT LOG

Project Name: Silver Lane Pickel Co.
Project Location: East Hartford, CT
Test Pit No: NA-TP-01

Project No: 68VC620

Test Pit Dimensions:
Length: NM
Width: NM
Depth: NM

Groundwater Observations:
At: NM After: Hours
At: After: Hours

Contractor: LEA
Equipment Used: Case 580E
Inspector: F. Postma
Weather:
Date: 11/01/96

Depth (Feet)	Sample Number	Strata Change	PID/FID (ppm)	Description of Materials
0				Brown, fine SAND, some medium Sand, loose, moist, sapric Organic Matter
	1020906 1020907 1020908 1020910		0.0 0.1 0.1 0.4	As Above
4				As Above
	1020911		0.2	As Above
				Bottom of Test Pit at 6.2'
8				
12				
16				
20				
24				

Comments:
Grab Sample: 1020906 taken from North side at 2.2'; 1020907 taken from East side at 3.0'; 1020908 taken from South side at 2.5'; 1020909 taken from West side at 3.0'; 1021010 taken from Bottom at 6'.

Test Pit No: NA-TP-01

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (860)747-6181 Fax (860)747-6181

TEST PIT LOG

Project Name: Silver Lane Pickel Co.
Project Location: East Hartford, CT
Test Pit No: NA-TP-02

Project No: 68VC620

Test Pit Dimensions:
Length: NM
Width: NM
Depth: NM

Groundwater Observations:
At: NM After: Hours
At: After: Hours

Contractor: LEA
Equipment Used: Case 580E
Inspector: F. Postma
Weather:
Date: 11/01/96

Depth (Feet)	Sample Number	Strata Change	PID/FID (ppm)	Description of Materials
0				Brown, fine SAND, little medium Sand, loose, moist, massive structure, metal
	1020911 1020912 1020913 1020914		0.0 0.2 0.3 0.2	As Above
4				As Above
	1021018		0.4	Dark brown, medium SAND, some fine Gravel, little coarse Sand, dense, moist
				Bottom of Test Pit at 6.0'
8				
12				
16				
20				
24				

Comments:
Grab Sample: 1020911 taken from North side at 2.3'; 1020912 taken from East side at 2.2'; 1020913 taken from South side at 3.0'; 1020914 taken from West side at 2.2'; 1021018 taken from Bottom at 6'.

Test Pit No: NA-TP-02

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (860)747-6181 Fax (860)747-6181

TEST PIT LOG

Project Name: Silver Lane Pickel Co.	Project Location: East Hartford, CT	Test Pit No: NA-TP-03

Project No: 68VC620

Test Pit Dimensions:
Length: NM
Width: NM
Depth: NM

Groundwater Observations:
At: NM After: Hours
At: After: Hours

Contractor: LEA

Equipment Used: Case 580E

Inspector: F. Postma

Weather:

Date: 11/01/96

Depth (Feet)	Sample Number	Strata Change	PID/FID (ppm)	Description of Materials
0				Brown to reddish brown, fine SAND, some medium Sand, trace coarse Sand, loose, moist, brick, tile
				As Above
	1021019		0.1	As Above
4	1021020		0.2	
	1021021		0.2	
	1021022		0.2	Dark brown to black, fine SAND, little medium Sand, little Silt, dense, moist, brick, concrete, metal (sludge-like)
	1021024			
	1021023		3.3	As Above
8				Bottom of Test Pit at 6.2'
12				
16				
20				
24				

Comments:
Grab Sample: 1021019 & 1021024 taken from North side at 4.0'; 1021020 taken from East side at 4.0'; 1021021 taken from South side at 4.0'; 1021022 taken from West side at 3.3'; 1021023 taken from Bottom at 6.2'.

Test Pit No: NA-TP-03

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (860)747-6181 Fax (860)747-6181

TEST PIT LOG

Project Name	Project Location	Test Pit No:
NK Undeveloped Land Soil Piles	Pratt & Whitney, East Hartford, CT	NK-TP-01

Project No: 68TR673

Test Pit Dimensions:

Length: 26
Width: 6
Depth: 9

Groundwater Observations:

At: NM After: Hours

Contractor: D. Legeyt

Equipment Used: Case 580 SuperE

Inspector: F. Postma

Weather: Sunny, 85F

Date: 8/19/96

Depth (Feet)	Sample Number	Strata Change	PID/FID (ppm)	Description of Materials
0				Pale yellow, fine SAND, trace(-) Silt, loose, moist to dry, massive structure
2				
4				
	1017463 1017464 1017465 1017466			Brownish yellow to dark brown, fine SAND, little medium Sand, trace Silt, moist, moderately dense, organic matter (sapric), stratified, grey, Silt inclusion on north side at 4', roots, mottles at 8.2'
6				As Above
8				
	1017422		0.3	As Above
				Bottom of Test Pit at 9'
10				
12				

Comments:
Grab Sample: 1017463 taken from south sideat 5.1'; 1017464 taken from west side at 5.6'; 1017465 taken from east side at 5.1'; 1017466 taken from north side at ;
1017462 taken from bottom at 9'.

Printed On: 6/17/1998

Test Pit No: NK-TP-01

LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (860)747-6181 Fax (860)747-8822

TEST PIT LOG

Project Name	Project Location	Test Pit No:
NK Undeveloped Land Soil Piles	Pratt & Whitney, East Hartford, CT	NK-TP-02

Project No: 68TR673

Test Pit Dimensions:

Length: 31.1
Width: 6.3
Depth: 9.2

Groundwater Observations:

At: NM After: Hours

Contractor: D. Legeyt

Equipment Used: Case 580 SuperE

Inspector: F. Postma

Weather: Sunny, 85F

Date: 8/19/96

Depth (Feet)	Sample Number	Strata Change	PID/FID (ppm)	Description of Materials
0				Yellowish red, fine SAND, trace medium Sand, trace(-) Silt, loose, moist to dry, roots, metal piping
4				Strong brown, fine SAND, little Silt, moderately dense, moist, organic matter (sapric), strong petroleum odor, stratified (rudely), wood blocks, glass, roots, plastic
	1017468		32	As Above
	1017469		720	
	1017470		120	
6	1017471		60	As Above
8	1017467		18	Brown to dark brown, medium SAND, some coarse Gravel, dense, moist, angular
10				Bottom of Test Pit at 9.2'
12				

Comments:
Grab Sample: 1017468 taken from south side at 5.3'; 1027469 taken from north side at 5.2'; 1017470 taken from west side at 5.3'; 1017471 taken from east side at 5.5'; 1017467 taken from bottom at 9.2'.

Printed On: 6/17/1998

Test Pit No: NK-TP-02

LEA LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (860)747-6181 Fax (860)747-8822

TEST PIT LOG

Project Name: NK Soil Piles Additional Investigation
Project Location: East Hartford, CT
Test Pit No: NK-TP-04

Project No: 68VC620

Test Pit Dimensions:
Length: NM
Width: NM
Depth: NM

Groundwater Observations:
At: NM After: Hours
At: After: Hours

Contractor: LEA
Equipment Used: Case 580E
Inspector: L. Bianchi
Weather:
Date: 11/01/96

Depth (Feet)	Sample Number	Strata Change	PID/FID (ppm)	Description of Materials
0				Reddish brown, fine SAND, some medium Sand, loose, moist
				Strong brown, fine SAND, little medium Sand trace Silt, loose, moist, strong petroleum odor
	1020891		6.0	As Above
	1020893		3.8	
	1020894		2.2	
4	1020892		2.4	As Above
				As Above
	1020895		30.0	Grey, medium SAND and fine SAND, loose, very moist, strong petroleum odor (free product?)
				Bottom of Test Pit at 6.0'
8				
12				
16				
20				
24				

Comments:
Grab Sample: 1020891 taken from North side at 3.0'; 1020892 taken from West side at 4.0'; 1020893 taken from South side at 3.0'; 1020894 taken from East side at 3.0'; 1020895 taken from bottom at 6.0'.

Test Pit No: NK-TP-04

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (860)747-6181 Fax (860)747-6181

TEST PIT LOG

Project Name: NK Soil Piles Additional Investigation
Project Location: East Hartford, CT
Test Pit No: NK-TP-05

Project No: 68VC620

Contractor: LEA

Test Pit Dimensions:
Length: NM
Width: NM
Depth: NM

Equipment Used: Case 580E

Inspector: L. Bianchi

Weather:

Groundwater Observations:
At: NM After: Hours
At: After: Hours

Date: 11/01/96

Depth (Feet)	Sample Number	Strata Change	PID/FID (ppm)	Description of Materials
0				Yellowish brown, fine SAND, some medium Sand, loose, moist, rebar, tile
	1020896 1020897 1020898 1020899		0.2 42 0.2 0.4	Dark brown, fine SAND, little medium Sand, trace(+) Silt, moist, loose, sapric and fibric Organic Matter, petroleum odor, rebar
4				As above
	1020900		475	As above
				Bottom of Test Pit at 6.2'
8				
12				
16				
20				
24				

Comments:
Grab Sample: 1020896 taken from North side at 2.0'; 1020897 taken from East side at 3.0'; 1020898 taken from South side at 2.5'; 1020899 taken from West side at 2.6'; 1020900 taken from Bottom at 6.0'.

Test Pit No: NK-TP-05

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (860)747-6181 Fax (860)747-6181

TEST PIT LOG

Project Name: NK Soil Piles Additional Investigation
Project Location: East Hartford, CT
Test Pit No: NK-TP-06

Project No: 68VC620

Contractor: LEA

Test Pit Dimensions:
Length: NM
Width: NM
Depth: NM

Equipment Used: Case 580E

Inspector: L. Bianchi

Weather:

Groundwater Observations:
At: NM After: Hours
At: After: Hours

Date: 11/01/96

Depth (Feet)	Sample Number	Strata Change	PID/FID (ppm)	Description of Materials
0				Brownish yellow, fine SAND, some medium Sand, loose, slightly moist, asphalt, metal
	1020901		0.1	As Above
	1020902		0.3	
	1020903		0.3	
	1020904		0.3	As Above
4			0.1	
	1020905		0.4	As Above
				Bottom of Test Pit at 6'
8				
12				
16				
20				
24				

Comments:
Grab Sample: 1020901 taken from North side at 3.0'; 1020902 taken from East side at 2.0'; 1020903 taken from South side at 2.0'; 1020904 taken from West side at 2.2'; 1020905 taken from Bottom at 6.0'.

Test Pit No: NK-TP-06

LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (860)747-6181 Fax (860)747-6181

APPENDIX D

Monitoring Well Construction Logs

NA-MW-01

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. NA-B-01

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 1
LOCATION N 150,088
E 183,865

ELEVATION 46.3
DATUM MDC/NGVD
START 10 October 1991
FINISH 10 October 1991
DRILLER K. Christiana
H & A REP C. Osgood

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE MOBIL 853
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0						
		2	S1	1.0		Loose dark brown loamy SILT, little roots,
		2	20	3.0	44.3	trace fine sand
		8			2.0	-SOD/FILL-
		10				Medium dense brown fine SAND, little medium sand
						-STREAM TERRACE DEPOSITS-
5		5	S2	5.0		Loose gray fine SAND, trace medium sand
		5	12	7.0		
		5				
		4				
10		3	S3	10.0		Loose brown medium to fine SAND, trace coarse sand
		3	16	12.0		
		5				
		5				-STREAM TERRACE DEPOSITS-
15		2	S4	15.0	30.8	
		2	12	17.0	15.5	Soft gray laminated silty CLAY, trace fine sand in frequent partings
		2				
		2				
		2	S5	17.0		Medium stiff gray laminated silty CLAY, trace
		3	24	19.0		fine sand in frequent partings
		2				
		2				-GLACIOLACUSTRINE-
20		3	S6	20.0		
		2	16	22.0		
		3				
		3			24.3	Same as S5
					22.0	Bottom of Exploration at 22.0 ft.
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/10/91			5.0	7.0	5.5

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	22.0
ROCK CORED (LIN FT)	--
SAMPLES	6s

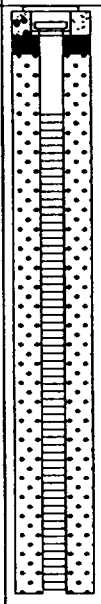
BORING NO. NA-B-01

MONITORING WELL COMPLETION LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford	**Start Date:** 2/20/97 **End Date** 2/20/97	**Boring ID** **NA-MW-05**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: Dave Brisson
Drilling Foreman: Jon Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elev./ Depth (Ft).	Well Construction Diagram	Sample Description Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness
0 4 8 12 16 20 24		

COVER STICK UP
TYPE: ~~Flush Mount~~

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: .5"
Length: 4'
Stick Up:

SEAL
Type: Bentonite
Quantity: 1/8 bag
Top Depth: Grade
Bottom Depth: 1'

SCREEN
Type: PVC Prepack Screen
Diameter: 1.5"
Slot Size: 0.010"
Top Depth: 2.25
Bottom Depth: 11.25'

FILTER PACK
Type: Native soil
Top Depth: 4.5'
Bottom Depth: 12.25

Comments:

Boring No: NA-MW-05

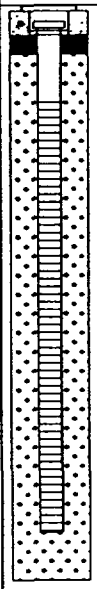
LEA
LOUREIRO ENGINEERING ASSOCIATES,PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

MONITORING WELL COMPLETION LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford	**Start Date:** 2/20/97 **End Date** 2/20/97	**Boring ID** **NA-MW-06**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: Dave Brisson
Drilling Foreman: Jon Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elev./ Depth (Ft).	Well Construction Diagram	Sample Description Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness
0		
4		
8		
12		Bottom of boring
16		
20		
24		

COVER Stick up
TYPE: ~~Flush Mount~~

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: .5"
Length: 4'
Stick Up:

SEAL
Type: Bentonite
Quantity: 1 cup
Top Depth: Grade
Bottom Depth: 1'

SCREEN
Type: PVC Prepack Screen
Diameter: 1.5"
Slot Size: 0.010"
Top Depth: 2'
Bottom Depth: 11'

FILTER PACK
Type: Native soil, natural to
Top Depth: 4.5'
Bottom Depth: 12.25

Comments:

Boring No: NA-MW-06

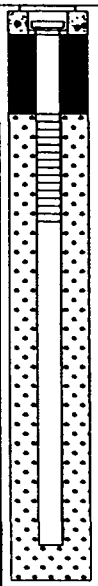
LEA
LOUREIRO ENGINEERING ASSOCIATES,PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

MONITORING WELL COMPLETION LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford	**Start Date:** 2/20/97 **End Date** 2/20/97	**Boring ID** **NA-MW-07**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: Dave Brisson
Drilling Foreman: Jon Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elev./ Depth (Ft).	Well Construction Diagram	Sample Description Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness
0		Brown, fine SAND, little very fine SAND, trace organics, moist, moderate dense
4		Top 4": Grey, brown, coarse to fine SAND, little fill material (asphalt, concrete) moist, loose; Middle 6": Orange brown, fine SAND, moist, loose; Bottom 8": Brown, fine to very fine SAND, dense, moist
		Top 6": Dark brown, very fine SAND and SILT, little organic matter, moist, dense; Bottom 14": Grey, fine SAND, trace organic matter, wet, loose
8		Top 12": As above bottom 14"; Middle 4": Grey, coarse to fine SAND, wet, loose, slight TPH odor; Bottom 4": Grey, fine SAND, wet, loose
		Grey, fine to medium SAND, wet, loose
12		As above
		Bottom of boring at 12'
16		
20		
24		

COVER STICKUP
TYPE: ~~Flush Mount~~

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: .5"
Length: 4'
Stick Up:

SEAL
Type: Bentonite
Quantity: 1/8 bag
Top Depth: grade
Bottom Depth: 4.5'

SCREEN
Type: PVC Prepack Screen
Diameter: 1.5"
Slot Size: 0.010"
Top Depth: 2.25'
Bottom Depth: 11.25'

FILTER PACK
Type: Natural native so
Top Depth: 4.5
Bottom Depth: 12

Comments: Well installed; screen 11' - 2' bags, riser 2' bags

Boring No: NA-MW-07

LEA
LOUREIRO ENGINEERING ASSOCIATES,PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. NK-MW-06

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 1
LOCATION N 149,208
E 184,617

ELEVATION 49.0
DATUM MDC/NGVD
START 1 October 1991
FINISH 1 October 1991
DRILLER B. Ursin
H & A REP C. Osgood

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE CME75
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0						
		6	S1	1.0		Medium dense brown medium to fine SAND, little fine gravel
		13	18	3.0		
		8				
		9			46.0	-FILL-
					3.0	
5		6	S2	5.0		Medium dense red-brown medium SAND, trace fine sand
		7	10	7.0		
		6				
		8				-STREAM TERRACE DEPOSITS
10		2	S3	10.0		Very loose red-brown medium SAND
		2	10	12.0		
		1			37.5	
		2			11.5	
		3	S4	12.0		Very soft red-gray laminated silty CLAY, trace fine sand in frequent partings
		2	14	14.0		
		2				-GLACIOLACUSTRINE-
		3				
		2	S5	14.0		Very soft gray laminated silty CLAy, trace fine sand in frequent partings
15		2	11	16.0		
		2				-GLACIOLACUSTRINE-
		2			33.0	
					16.0	Bottom of Exploration at 16.0 ft.
						Note: Observation well installed at 11.5 ft.
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/1/91	1300		10.0	11.9	5.4

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	16.0
ROCK CORED (LIN FT)	--
SAMPLES	5s

BORING NO. NK-MW-06

APPENDIX E

Technical Memorandum 4
Background Soil Sampling and Analysis

TECHNICAL MEMORANDUM 4
BACKGROUND SOIL SAMPLING AND ANALYSIS

SUMMARY
SITE INVESTIGATION AND REMEDIATION REPORT
AIRPORT/KLONDIKE AREA
AT
PRATT & WHITNEY
EAST HARTFORD, CONNECTICUT
EPA ID No. CTD990672081

Prepared for:

PRATT & WHITNEY
400 Main Street
East Hartford, Connecticut 06108

Prepared by:

LOUREIRO ENGINEERING ASSOCIATES
100 Northwest Drive
Plainville, Connecticut 06062

LEA Comm. No. 68V8124

Table of Contents

TABLES

DRAWINGS

ATTACHMENTS

Acronyms

AEL	Averill Environmental Laboratory, Inc.
CFR	Code of Federal Regulations
DEP	State of Connecticut Department of Environmental Protection
DPH	State of Connecticut Department of Public Health
FID	Flame-Ionization Detector
F&O	Fuss & O'Neill, Inc.
H&A	Haley & Aldrich, Inc.
LEA	Loureiro Engineering Associates, P.C.
M&E	Metcalf & Eddy, Inc.
NTU	Nephelometric Turbidity Unit
P&W	Pratt & Whitney
PETG	Polyethylene terephthalate copolyester
PID	Photo-Ionization Detector
PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
QUANT	Quanterra Environmental Services, Inc.
RCSA	Regulations of Connecticut State Agencies
SCS	US Soil Conservation Service
SOP	Standard Operating Procedure
TM	Technical Memoranda
VOC	Volatile Organic Compound

1. INTRODUCTION

1.1 Purpose and Objective

This Technical Memorandum (TM) presents the methodology and results of the soil background metals sampling and analysis methodologies used in the Airport/Klondike Area (the Site) of the Pratt & Whitney (P&W) facility located at 400 Main Street (Main Street facility) in the Town of East Hartford, Connecticut. Background soil metals data were collected from undisturbed areas of the North Klondike, as part of the remediation of the X-194 Test Stand in the North Klondike Area, to characterize the nature and distribution of natural metals in the unconsolidated materials at the Site. Additionally, background soil metals data for glaciolacustrine sediment samples were obtained from soil borings selected from portions of the Airport/Klondike Area where contamination was not identified in the overlying soils.

1.2 Background

The Airport/Klondike Area is located on the eastern portion of the P&W Main Street facility on the east side of the main plant, north of Brewer Street and south of Silver Lane. The Airport/Klondike Area consists of four study areas that include the North and South Airport Areas and the North and South Klondike Areas. Previous investigations at the Site performed from 1990 through 1997, as area-specific investigations and site-wide investigations related to environmental conditions, have resulted in the installation of numerous soil borings, monitoring wells, and surficial soil samples throughout the Airport/Klondike Area.

During the remediation activities associated with the X-194 Test Stand in the North Klondike, soil samples were collected in portions of the North Klondike from reportedly undisturbed areas and areas that have been disturbed, but never used for industrial activities. The X-194 Test Stand was used for the testing of beryllium-based fuels. Therefore, as part of establishing target clean-up levels for the remediation activities, the background concentration of beryllium had to be determined. Analyses for background concentrations in soil were conducted for all of the metals listed in Title 40 of the Code of Federal Regulations, Part 261, Appendix IX (40 CFR 261 Appendix IX). The Appendix IX metals include antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, thallium, tin, vanadium, and zinc, and additionally aluminum, silicon, and sodium.

As part of the most recent site investigation activities, soil borings were installed throughout the Airport/Klondike Area. Analytical data and historical operations information associated with

these selected soil boring locations indicated that these borings were located upgradient of potential contaminant release area. Samples from these soil borings of the underlying glaciolacustrine sediment, generally referred to as clay, were submitted for laboratory analysis of metals. Data from this site characterization has been used as sitewide background data for the current site investigation activities throughout the Airport/Klondike Area.

1.3 Scope

This TM covers the sampling and analyses of the background soil samples collected during the investigation and remediation of the X-194 Test Stand for the period 1993 through 1994, and glaciolacustrine sediment samples collected during various soil boring programs for the period from 1992 through 1997. This TM describes the soil sampling and analytical methods, the analytical results, and the statistical analysis of the data, and the development of background soils metals concentrations.

1.4 General Geologic and Hydrogeologic Conditions

The geologic and hydrogeologic characteristics of the Site are discussed in detail in the main body of this report. In general, the surficial materials in which the majority of the monitoring wells are screened, consist of medium to fine grained sands with trace levels of fine gravels and coarse sands. These sediments are generally post-glacial, fluvial deposits associated with the Connecticut River, although in many places the upper portion of these sediments have been anthropogenically disturbed during on-site construction activities. Beneath the fluvial sediments are glaciolacustrine sediments, primarily laminated silts and clays, associated with glacial Lake Hitchcock. The basal sediment layer over most of the area is glacial till and stratified drift. Bedrock in the general East Hartford area consists of Triassic Age, interbedded arkoses and basalts. Bedrock in the area has a general slight dip eastward cut by widespread steep faults.

The regional drainage basin is the Upper Connecticut River Basin. Regional flow in the unconsolidated materials in this part of the basin is to the west, towards the Connecticut River. Local groundwater flow is also controlled to some extent by local drainage sub-basins and topography. The upper portion of the unconsolidated sediments serves as the primary aquifer in the area. Groundwater flow in the bedrock is primarily within fractures and fault planes, and to a lesser extent within the rock matrix. The local bedrock aquifer would be adequate as a residential water supply source, but groundwater yields are typically too low to be of commercial or industrial use.

1.5 Soil Types

Soils within the Airport/Klondike Area were mapped by the US Soil Conservation Service (SCS) in the 1950s. At that time, the soils at the Site were mapped by the SCS as Made Land, Ninigret Fine Sandy Loam, Windsor Series Loamy Fine Sand, the Walpole Series Loam, the Saco Series Loam, and the Sudbury Series Fine Sandy Loam. The distribution of soil types, as mapped by the SCS (1962), is shown on Drawing TM4-1. These soil types are described by the SCS (1962) as follows.

> **Made Land** *Made land occurs where the surface soil and subsoil have been stripped, and where earth, trash, or both, are used as fill material. It also occurs where sand and gravel have been removed and the unwanted material was left in ridges or mounds. Made land also includes areas where the soil profiles have been disturbed through leveling or other means.*

Ninigret Series The Ninigret Series consists of moderately well drained to somewhat poorly drained soils. These soils are typically coarse to medium textured and are typically developed on glaciolacustrine, glaciofluvial, and stream terrace deposits. These soils have developed from sediments derived from both crystalline rocks and the Triassic shales and sandstones.

> **Ninigret Series Fine Sandy Loam** *(0 to 3 percent slopes) This soil has a light fine sandy loam and sandy loam surface soil and upper subsoil. It is rapidly permeable above the seasonal high water table and has a moderate moisture holding capacity. Because the texture is coarser, it dries out faster in spring than Ninigret very fine sandy loam, 0 to 3 percent slopes. Small areas of loamy fine sand are included with this soil type.*
>
> *About 25 percent of the acreage is in forest. Cleared areas are used mainly for tobacco, potatoes, hay, and pasture. Some of the acreage is used for silage corn, sweet corn, vegetables, nursery stock, and alfalfa. Without drainage, the soil generally is suited to silage corn, late vegetables, hay, and pasture. Fully drained or partly drained areas are suitable for tobacco, potatoes, and general crops. However, tobacco and potatoes are subject to damage in very wet seasons during the summer. Fertilizers are needed to produce high yields. Applied plant nutrients, however, leach out fairly rapidly. This soil requires management that will maintain the supply of organic matter and good tilth.*

Saco Series The Saco Series consists of frequently flooded, very poorly drained soils on flood plains. These soils, which generally occur in slight depressions that border terrace escarpments or uplands, in old oxbows and narrow floodplains, generally has a dark gray to black silt loam to loamy sand surface. The subsurface of Saco Series soils is generally mottled with gray. Water may stand on the surface of these soils for long periods during the winter and spring.

> **Saco Silt Loam** *(0 to 3 percent slopes) This soil is used mainly for forest, unimproved pasture, and wildlife because it is very poorly drained and frequently flooded. Unimproved pastures furnish some grazing in dry seasons. Drainage is generally not practical because of frequent flooding and the lack of suitable outlets.*

Sudbury Series The Sudbury Series soils consist of moderately well drained soils that have developed on sand and gravel deposits of stream terraces. These soils typically occur in small areas throughout Hartford County.

> **Sudbury Fine Sandy Loam** *(0 to 3 percent slopes) This soil is rapidly permeable, but a seasonal high water table interferes with internal drainage. Mottles at depths of 10 to 18 inches indicate that the lower subsoil is waterlogged in wet seasons. The soil is fairly easy to drain, because it is underlain by sand and gravel. A few areas having slopes of 3 to 6 percent are included with this soil.*
>
> *About 60 percent of the acreage has been cleared and is used mainly for hay and pasture. Some acreage is used for tobacco, potatoes, vegetables, silage corn, and other crops. Undrained areas are generally suited to hay, pasture silage corn, and late vegetables. Drained areas are fairly well suited to tobacco, potatoes, and other crops. Even if the soil is drained, tobacco and potatoes are subject to damage in very wet growing seasons. The soil needs fertilizer, drainage for some crops, and management that will maintain tilth and the supply of organic matter.*

Windsor Series The Windsor Series soils consist of very droughty sand and loamy soils which have typically developed on nearly level to sloping and rolling terraces. Well-defined dunes occur in areas of loamy fine sand where reworking by wind has taken place. Areas of loamy fine sand and fine sand are essentially free of gravel.

> **Windsor Series Loamy Fine Sand** *(0 to 3 percent slopes) This soil is very rapidly permeable and has a low moisture-holding capacity. It is excessively*

drained and warms very early in spring. It responds to fertilizer when the moisture supply is adequate.

About 75 percent of the acreage is forested, idle, or in urban development. Tobacco and sweet corn are the main crops, but some acreage is used for early vegetables, corn, alfalfa, pasture, and other crops. Alfalfa grows fairly well. This soil is not well suited to crops, hay, and pasture because of droughtiness. A large part of the tobacco, sweet corn, and early vegetables is irrigated. If fertilizer is applied in large quantities, good yields of crops are obtained.

Walpole Series Walpole Series soils consist of moderately coarse to medium texture, poorly drained soils which have developed from sandy or sandy and gravelly stream terrace deposits. Because these soils are poorly drained they qualify as wetland soils under the Regulations of Connecticut State Agencies (RCSA).

Walpole Series Loam *(0 to 3 percent slopes) This soil includes loam, very fine sandy loam, and silt loam textures.*

Use, suitability, and management are essentially the same as for Walpole sandy loam, 0 to 3 percent slopes. (About 50 to 60 percent of the acreage is in forest, and some is idle. A large percentage of the cleared area is used for pasture and hay. Small areas are drained or partly drained and are used for silage corn, sweet corn, tobacco, potatoes, vegetables, and other crops. Undrained areas are best suited to sod crops. Partly drained areas are suited to silage corn and late vegetables. Well-drained areas are fairly well suited to tobacco and potatoes. The soil is not suited to alfalfa and tree fruits. The major needs of this soil are drainage, fertilizer, and lime. The soil is relatively easy to drain because of the sandy, gravelly substrata.) Because of the finer texture, this soil dries out somewhat more slowly in spring. If drained, it is not quite so well suited to cultivated crops.

1.6 Soil Sampling Locations and Rationale

The general distribution of surficial materials as mapped by the SCS (1962) is shown on Drawing TM4-1. The main areas of activity in the Klondike Area were done on Made Land or areas which were once Walpole Fine Sandy Loam. In addition, Ninigret Fine Sandy Loam is also present over large areas of the Klondike. It is thought that the Ninigret Fine Sandy Loam is

compositionally similar to the Walpole Fine Sandy Loam and therefore this soil type was not considered separately.

In addition to the soils developed on the surficial stream terrace deposits, the Airport/Klondike Area is underlain by glaciolacustrine sediments. Although these glaciolacustrine sediments are not exposed at the surface, and none of the soils on the Site have developed directly from these materials, the glaciolacustrine sediments are thought to represent a significant hydrologic boundary. Therefore, samples of the glaciolacustrine sediments were analyzed to provide information regarding the distribution of natural metals in this material.

To provide a comparison between the natural soils and the Made Land present in the North Klondike, eight sampling locations from a reportedly undisturbed area north of the X-194 Test Stand and eight sampling locations from an area of Made Land east of the test stand were chosen. The samples from the undisturbed area were located in an area of Walpole Series soils. Both of the sampling areas were reported to be located sufficiently far from the test stand to have been unaffected by site operations and activities. The X-194 Test Stand is located on an area of Made Land, reportedly created from Walpole Series soils.

Sampling locations were chosen from the Made Land east of the test stand to approximate soil conditions present at the X-194 Test Stand prior to the start of operations, but after the disturbance of the soils. The sampling locations from the Walpole Series soils were selected to approximate soil conditions at the X-194 Test Stand prior to construction. Additionally, the location of the sampling points being sufficiently far from the X-194 Test Stand to have not been influenced by test stand operations.

Samples of the glaciolacustrine sediments were collected during the installation of contaminant delineation borings. Selected samples were analyzed for metals during the course of the various investigations at the Site. Samples included in this TM were selected based on the geologic descriptions provided by the field personnel, the analyses performed on the samples, and the analytical results from overlying samples in that soil boring. In general, samples were selected from areas where metals were not considered the primary contaminants. If possible, to reduce the possibility of contamination from overlying materials, samples selected for this analysis were not the uppermost clay sample logged for the boring, but were from 0.5 to 1 foot below the upper clay boundary.

The locations of the sixteen soil sampling locations, NK-SB-100 through NK-SB-115, are shown on Drawing TM4-2. The locations of the glaciolacustrine sediment sampling locations are shown on Drawing TM4-3.

2. METHODOLOGY

This section presents the methods and techniques used to collect, describe, and analyze the background soil samples collected in the North Klondike Area by Fuss & O'Neill, Inc. (F&O) (F&O, 1994). In addition, this section provides a brief description of the methods used to collect samples of the glaciolacustrine sediments by Loureiro Engineering Associates, P.C. (LEA).

2.1 General Procedures

Based upon the general location requirements, background soil sampling locations were field located by F&O personnel. The sampling locations appear to have been either randomly selected in the field or selected as representative of the desired soil type based upon the judgment of the field sampling crew. The background soil sampling locations were recorded on the field sampling data sheets, along with other pertinent information. All background soil samples of Made Land and Walpole Series soils were collected on December 17, 1993. Details of the chain-of-custody, storage and handling, and laboratory submission were unavailable.

Background soil sampling was expanded to include glaciolacustrine sediments collected during investigations conducted at various environmental units in the Airport/Klondike Area. The soil borings installed during the most recent investigation activities were installed in general accordance with the procedures described in LEA Standard Operating Procedures (SOP) *Standard Operating Procedure for Geoprobe® Probing and Sampling*, the LEA SOP *Standard Operating Procedure for Geologic Logging of Unconsolidated Sedimentary Materials* and the LEA SOP *Standard Operating Procedure for Soil Sampling.*

2.2 Soil Sampling Methods

2.2.1 Walpole Series and Made Land Soil Sampling Methods

The sixteen Walpole Series and Made Land soil samples were collected by removing the vegetative cover or organic soil layer and troweling a sufficient volume of soil for the analytical procedures directly into 4-ounce, glass sample containers with Teflon®-lined lids. At the time of sample collection, field personnel recorded sample identification information, including sample number, time and date of collection, field personnel identification, and sampling location identifier, and descriptive information for each sample, including soil type, color, apparent grain size information, moisture content, and other appropriate information. This field sampling

information was recorded on field data sheets by F&O personnel. Copies of the field data sheets are included in Attachment A.

2.2.2 Glaciolacustrine Sediment Sampling Methods

Eighteen samples of the glaciolacustrine sediments underlying the upper unconsolidated materials of the Site have been collected from soil borings and submitted for laboratory analysis. The soil borings selected were ones in which contamination was not identified. These samples were collected using the LEA Geoprobe® direct-push drilling system and Macro-Core® soil sampling system. These methods are more fully described in Technical Memorandum 5, *Soil Sampling*.

In brief, the Geoprobe® direct-push drilling system consisted of a truck-mounted, hydraulically operated percussive hammer device. The hammer was used to drive a sealed Macro-Core® soil sampler to an operator selected depth. At the selected depth, the seal was retracted by the operator, and the sampler was then driven to the final sampling depth which forced soil into the sampler. The sampler was lined with expendable polyethylene terephthalate copolyester (PETG) liners which were removed after the sampler was recovered from the borehole. After the sample liner was removed from the sampler, the contained soil was sampled for specific analytical and geologic requirements, as necessary.

2.3 Analytical Procedures

All sixteen of the surface soil samples were submitted to Ceimic Corporation for analysis of all 40 CFR 261 Appendix IX metals, including antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, thallium, tin, vanadium, zinc, and additionally for aluminum, silicon, and sodium. Laboratory reports for these surface soil samples were submitted directly to P&W and only summary analytical information was reported by F&O (F&O, 1994).

The glaciolacustrine sediment samples were analyzed by Averill Environmental Laboratory, Inc. (AEL). Samples were submitted to AEL were analyzed for arsenic, barium, cadmium, chromium, lead, mercury, nickel, selenium, silver, and zinc. Analytical data from AEL was submitted to LEA directly in both hardcopy and electronic formats and was directly incorporated into the site database maintained by LEA.

2.4 Decontamination of Materials and Equipment

Dedicated sampling equipment was used during the sampling of the Walpole Series and Made Land soils. Field decontamination was not required for the dedicated equipment as it was precleaned and disposed of after a single use.

Samples of the glaciolacustrine sediments were not collected as part of a separate soil sampling program, but were anecdotal samples obtained during the installation of various soil borings. The purpose of consistent decontamination procedures was to prevent the potential spread of contamination between boreholes and samples, and from the immediate work area around the well borehole. All equipment and materials placed into a borehole or associated with the collection and sampling of soil from a borehole was decontaminated prior to initiating the drilling activities and between individual samples, as appropriate. Decontamination procedures are presented in the LEA SOP *Standard Operating Procedure for Hollow Stem Auger Soil Borings*.

Downhole equipment (e.g., drill rod, Macro-Core® sampling tubes, etc.) were decontaminated prior to initiating any drilling activities at the Site. Sampling equipment such as Macro-Core® sampling tubes and stainless steel spatulas were decontaminated between uses in the field at the drilling site or the decontamination pad. The decontamination pad was typically a portable plastic or metal basin of sufficient volume to hold drilling equipment which could be laid beneath the back end of the drilling rigs to contain the spent decontamination fluids.

The sampling equipment was decontaminated using the following procedure:

- Brush off gross soil particles.
- Wash and scrub equipment with phosphate-free detergent.
- Rinse equipment with deionized water.
- Rinse equipment with dilute nitric acid solution.
- Rinse equipment in deionized water.
- Rinse equipment with dilute methanol in water solution.
- Rinse equipment in deionized water.
- Allow equipment to air dry.

The decontamination water was maintained in 5-gallon buckets during use, and transferred to 55-gallon drums for disposal. LEA field personnel were responsible for preventing cross-contamination between soil samples collected for laboratory analysis. Sample preparation tables were covered with clean, disposable plastic. Clean, disposable plastic was also laid on the

ground beneath the sample preparation tables and the decontamination solutions to catch dropped soil and spilt decontamination solutions.

2.5 Sample Location Identifiers

Monitoring wells, as well as piezometers, stream gauges, soil borings, surface water and sediment sampling locations have been identified using a systematic method to prevent duplication of location identifiers, and relatively easy means of finding the referenced location on site maps. All areas of the Pratt & Whitney East Hartford facility (including the Andrew Willgoos Turbine Laboratory, the Colt Street wastewater treatment facility, and other areas of the facility not included in this TM) have been assigned two-letter identifiers based upon the common name for the area. These two-letter designations are presented in Table 1.

In addition, each type of sampling location has been assigned a two-letter designation to distinguish the various type of sampling, locations possible. The two-letter designations for the various sampling locations are also presented in Table 1. Because of the large number of soil and water monitoring locations existing on site, and the large areas involved, the Airport and Klondike areas have each been broken down into northern and southern sections. All monitoring and sampling locations have been given a location identifier based on their location in the Airport or Klondike Areas, the type of sampling or monitoring location, and finally a sequential numeric identifier based upon the specific type of location.

2.6 Waste Management

All spent decontamination fluids generated during drilling activities and purge water generated during monitoring well development activities for the site characterization was placed in 55-gallon closed-top drums supplied by P&W for subsequent off-site disposal by P&W. The drums were labeled, the wells contributing to each was listed, and the information tracked to aid in waste characterization and disposal.

All soil cuttings generated during drilling activities were placed in 55-gallon open-top drums supplied by P&W for subsequent off-site disposal by P&W. The drums were labeled, the locations contributing to each was listed, and the information tracked to aid in waste characterization and disposal.

2.7 Health and Safety

Sampling was performed by F&O personnel under their corporate, site-specific health and safety plan. Loureiro Engineering Associates field crews conducted field operations in accordance with the LEA Site Health and Safety Plan. In general, soil sampling was conducted in modified Level D personal protective equipment (PPE) consisting of safety glasses, surgical or nitrile gloves, and hard hats and steel-toed shoes for the drill rig operators.

3. RESULTS AND CONCLUSIONS

3.1 Soil Types

At the time the background soil samples were collected by F&O personnel, a description of the collected soil was recorded on the field data sheets. The sixteen soil samples collected appear to fall into groups, based primarily upon the soil color and descriptions provided on the field sampling records. The eight samples collected from north of the X-194 Test Stand, NK-SB-100 through NK-SB-107, and one sample collected from east of the test stand area, NK-SB-108, were described as very dark brown (reported as a dusky yellowish brown, but noted as having a Munsell® color designation 10YR 2/2), medium to fine grained sand. Four of the samples collected from east of the test stand area, NK-SB-109 through NK-SB-112, were described as black (reported as brownish black, but noted as having a Munsell® color designation 5YR 2/1), fine to medium sand. Three of the samples collected from east of the test stand area, NK-SB-113 through NK-SB-115, were described as reddish brown (reported as a medium yellowish brown, but noted as having a Munsell® color designation 10YR 5/4), coarse to fine grained sand.

Descriptions of the sampling locations from the area north of the test stand area, NK-SB-100 through NK-SB-107, indicate that the soils in the general area may have been influenced to some degree by human activities. Identified in the descriptions are an access road, a chain-link fence, a "depression," a pile of wood chips, and the diverted unnamed stream. The presence of these entities indicates some degree of prior human activity in the area, however, they do not indicate that the soil structures were definitely altered. Two of the samples, NK-SB-103 and NK-SB-105, were reported to have foreign material described as "wood chips" present. All but two of the samples from this area, NK-SB-106 and NK-SB-107, were identified as "wetland" soils on the field sampling records.

Descriptions of the sampling locations from east of the test stand area, NK-SB-108 through NK-SB-115, indicate that samples from NK-SB-109 through NK-SB-111 were collected from the top of two "ridges" in the area, sample NK-SB-112 was collected from a lowland area between the two ridges, and samples from NK-SB-108, NK-SB-113 through NK-SB-115 were collected in various other locations in the general vicinity. The soil sample collected from NK-SB-113 was identified as a "wetland" soil on the field sampling record.

SCS mapping of the soils appear have some inconsistencies. For instance, areas of the North Airport where the paved landing field exists are mapped as natural soils and should have been mapped as Made Land. Additionally, areas of the Klondike where historical operations and

construction activities have occurred are also mapped as natural soils and should have been mapped as Made Land. These apparent inconsistencies are due to the timing of the field mapping, the construction activities in the Airport/Klondike Area, and the aerial photography that was done for publication. The northeast corner of the Airport runway was extended, and construction activities in the Klondike were commenced after the field mapping activities, but before the aerial photography was performed.

For the initial analysis of these samples, F&O divided the samples into Walpole soils and Made Land, based upon the SCS mapping. However, based upon the field descriptions of the soils recorded at the time of sampling, F&O identified two soil samples, originally collected as Walpole Series soils north of the test stand area, as being more consistent with Made Land soils and grouped these results with the Made Land data. The report did not explicitly identify the two samples, however it appears that the samples were NK-SB-106 and NK-SB-107, because these samples were not identified as "wetland" soils on the field sampling records, and it appears that the data from these samples were incorporated into the Made Land data during the statistical analyses. Consequently, F&O identified six Walpole soil data and ten Made Land soil data.

In general, these divisions appear to be somewhat arbitrary based upon the descriptions of the Walpole Series provided by the SCS, and the soil descriptions provided by the field sampling crews. The soil descriptions provided by the field sampling crews are not detailed soil descriptions, but are minimal Burmister soil descriptions and Munsell® color descriptions. No indication of visually identifiable disturbances to the soil structure, the presence or absence of soil structure, or other standard soil descriptions are provided to justify the sample differentiation. Therefore, these samples were treated as one group of background soil for the statistical analyses performed.

3.2 Analytical Results

3.2.1 Walpole Series and Made Land Soils Analytical Results

Walpole Series and Made Land soil samples were submitted for analysis for the metals listed in 40 CFR 261 Appendix IX, including antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, thallium, tin, vanadium, and zinc, and additionally for aluminum, silicon, and sodium. Summary analytical results for the Walpole Series and Made Land soil samples are presented in Table 2. No antimony, silver, thallium, or tin was detected in any of the Walpole Series or Made Land soil samples collected.

3.2.2 Glaciolacustrine Sediment Analytical Results

Glaciolacustrine sediment samples were submitted for analysis of arsenic, barium, cadmium, chromium, lead, mercury, nickel, selenium, silver, and zinc. Arsenic, barium, cadmium, chromium, nickel, and zinc were detected in the majority of the samples submitted for analysis. Lead was detected in only one sample, and mercury was detected in two samples. Summary analytical results for the glaciolacustrine sediment samples submitted for analysis are presented in Table 3. No selenium or silver was detected in any of the glaciolacustrine sediment samples submitted for analysis.

3.3 Statistical Analysis of Walpole Series and Made Land Soils Metals Concentrations

A statistical analysis of the metals data was performed to determine the average concentration of each of the metals detected in the soil samples and to estimate a maximum concentration of each analyzed metal likely to occur naturally in the onsite soils. For instances in which not all of the data were non-detects, the sample results reported as non-detected were replaced with a value equal to one-half the detection limit. The use of one-half the detection limit in place of the non-detect does not bias the estimate of the mean, but can bias the estimate of the standard deviation of a population (Gilbert, 1989). Due to the relative values of the detection limit and the detected concentrations, the relative error associated with this method appears to be acceptable for the uses of the data and is likely to be on the order of the associated measurement errors.

Descriptive statistics, including the mean, standard error of the mean, variance and standard deviation, median, mode, skewness and kurtosis, were generated for each of the metals. These descriptive statistics for the background soil samples are presented in Table 4.

In order to provide an estimate of the maximum concentration expected to occur naturally in soils, a non-parametric 95th Percentile Level or each metal was calculated. Non-parametric estimates were used because of the number of samples available. When only a few samples are available, the power of the statistical tests of normality are lower than or larger data sets. Because of the dependency of the parametric statistical estimators on the underlying population distribution, non-parametric statistics were preferred. The 95th Percentile Level concentration for a specific metal is an estimate of the concentration below which 95% of the population will lie. Non-parametric percentile level estimates are based on a linear regression of sample ranks, rather than against a specific population distribution such as the Normal Distribution.

3.4 Statistical Analysis of Glaciolacustrine Sediments Metals Concentrations

The metals concentrations in the glaciolacustrine sediments were calculated in the same manner as the metals concentrations in the Walpole Series and Made Land soils. Only one glaciolacustrine sediment sample contained a detectable concentration of lead, and none contained detectable concentrations of selenium or silver. Two samples contained detectable concentrations of mercury. The remaining metal analytes, arsenic, barium, cadmium, chromium, nickel, and zinc, were detected in between twelve and seventeen of the samples.

Descriptive statistics, including the mean, standard error of the mean, variance and standard deviation, median, mode, skewness and kurtosis, were generated for each of the metals. These descriptive statistics for the background soil samples are presented in Table 4.

In order to provide an estimate of the maximum concentration expected to occur in the glaciolacustrine sediments, a non-parametric 95-Percentile Level or each metal was calculated. Non-parametric estimates were used because of the number of samples available. When only a few samples are available, the power of the statistical tests of normality are lower than or larger data sets. Because of the dependency of the parametric statistical estimators on the underlying population distribution, non-parametric statistics were preferred. The 95-Percentile Level concentration for a specific metal is an estimate of the concentration below which 95% of the population will lie. Non-parametric percentile level estimates are based on a linear regression of sample ranks, rather than against a specific population distribution such as the Normal Distribution.

3.5 Average Walpole Series and Made Land Soil Metals Concentrations

The maximum expected concentrations of metals, as determined from the analyses of Walpole Fine Sandy Loam and Made Land soil samples collected from the areas north and east of the X-194 Test Stand area are presented in Table 4.

The background reference concentrations statistically calculated from the soils analyses were also compared to published reference concentrations of metals from *Elemental Concentrations in Soils and Surficial Materials of the Conterminous United States*, (Shacklette and Boerngen, 1984) to determine if the values were "reasonable." Data from Shacklette and Boerngen (1984) is presented in Table 6.

In general, the reference concentrations determined statistically from the background soil sampling are within the limits of observed soil metals concentrations reported in Shacklette and

Boerngen (1984), and most are also sufficiently close to the average observed concentrations to be considered "reasonable." The only exception would be the reference concentration of lead which was calculated as 162 mg/kg and Schacklette and Boerngen (1984) report an observed maximum of 70 mg/kg. The difference appears to be due to the presence of four samples from the area north of the X-194 Test Stand area which contained in excess of 100 mg/kg of lead. A review of the sampling and analytical information associated with these four samples did not indicate any unusual circumstances or otherwise elevated analytical data, and therefore there does not appear to be any reason to reject the data as outliers.

3.6 Average Glaciolacustrine Sediments Metals Concentrations

The maximum expected concentrations of metals in the glaciolacustrine sediments, as determined from the analyses of glaciolacustrine sediment samples from various areas of the Site, are presented in Table 5.

The metals concentration data were not compared to observed soil metals concentrations reported by Shacklette and Boerngen (1984), because these data do not represent the same type of materials as the glaciolacustrine sediments. In general, however, the reference concentrations determined statistically from the glaciolacustrine sediment analyses are similar to the data presented by Shacklette and Boerngen (1984). The glaciolacustrine sediments appear to have significantly higher concentrations of cadmium, mercury, and nickel then the materials analyzed by Shacklette and Boerngen (1984).

Metals concentrations in the glaciolacustrine sediments is a result of the initial metals content of the sediments, and subsequent metals adsorption on clay minerals during diagenesis. The metals adsorbed onto the clay mineral surfaces would be a function of the available metals, the type of clay minerals present, and the geochemistry of local groundwaters.

3.7 Conclusions

Sitewide background soil metals concentrations in Walpole Series soils and Made Land soils in the North Klondike were estimated based on soil samples collected from specific soil series in the area. Generally, the number of data points appears adequate for the Walpole Soils and Made Land areas. Although the number of data points is somewhat restricted, it is likely that additional sampling would be difficult and that the reference concentrations would not change significantly. In fact, it is possible, based on the previous decision to discard apparent outliers, that the reference concentrations would increase.

The calculated reference concentrations appear to be conservatively estimated and adequately distributed in the areas reported to represent undisturbed areas of the Site. The statistical analysis of the data appears to be adequate, and the elimination of the extreme values from selected populations represents a conservative estimate of the population parameters. The calculated reference concentrations of metals in soils compare favorably to published values for occurring metals in natural soils in the United States.

Metals concentrations in the glaciolacustrine sediments underlying the upper unconsolidated sediments were estimated based on eighteen selected analyses. These data were analyzed statistically in a manner similar to that used for the Walpole Series and Made Land soils. In general, metals analyses for the glaciolacustrine sediments are similar to, but not directly comparable to, the metals data for the on-site background soils and "typical" surficial materials.

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TABLES

Table 1
Area and Sampling Type Identifiers
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Area Designation	Area	Sampling Type Identifier	Explanation
AB	Within A Building	MW	Monitoring Well
BB	Within B Building	PZ	Piezometer
CB	Within C Building	SW	Surface Water
DB	Within D Building	SD	Sediment
EB	Within E Building	CC	Concrete Chip
FB	Within F Building	SS	Surface Soil
GB	Within G Building	SB	Soil Boring
HB	Within H Building		
JB	Within J Building		
KB	Within K Building		
LB	Within L Building		
MB	Within M Building		
CS	Colt Street Facility		
EA	Engineering Area		
ET	Experimental Test Airport Laboratory		
LM	Area Outside Buildings L and M		
NA	North Airport Area		
NT	North Test Area		
NW	North Willgoos Area		
PH	Powerhouse Area		
SA	South Airport Area		
SK	South Klondike Area		
ST	South Test Area		
SW	South Willgoos Area		
WT	Waste Treatment Area		
XT	Experimental Test Area		

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Metals Concentrations in Walpole Series and Made Land Soils
Airport/Klondike Area, Pratt & Whitney, East hartford, Connecticut

Boring Number	Description	Soil Type		Percent Solids	Constituent				
		Mapped	Determined		Aluminum	Antimony	Arsenic	Barium	Beryllium
NK-SB-100	Dusky brown (5YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	71.4	2900	7.1 U N	1.1 B	8.3 B	0.09 U
NK-SB-101	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	56.9	4400	8.3 U N	4.4	22.5 B	0.11 U
NK-SB-102	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	42.3	3290	12.2 U N	3.9 B	49.8 B	0.16 U
NK-SB-103	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	46.3	4260	7.9 U N	4.7	55.1 B	0.34 B
NK-SB-104	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	68.0	2670	6.6 U N	2.9	8.2 B	0.11 B
NK-SB-105	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	50.2	3620	8.9 U N	5.3	33.5 B	0.13 U
NK-SB-106	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	52.5	3960	8 U N	3.8	28.2 B	0.12 U
NK-SB-107	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	63.6	5210	7.5 U N	1.5 B	46.8 B	0.30 B
NK-SB-108	Dusky yell. brown (10YR 2/2) fine to med. sand	Made Land	Made Land	82.4	4930	4.5 U N	1.8	8.2 B	0.13 B
NK-SB-109	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	84.9	7980	5.6 U N	1.7 B	14.1 B	0.21 B
NK-SB-110	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	78.1	8110	6.8 U N	20 B	11.1 B	0.21 B
NK-SB-111	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	75.7	8620	6.7 U N	2.5	10.4 B	0.21 B
NK-SB-112	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	76.7	4000	5 U N	0.95 B	8.1 B	0.1 B
NK-SB-113	Dusky yell. brown (10YR 2/2) fine to coarse sand	Made Land	Made Land	77.3	4860	6.8 U N	1.9 B	6.8 B	0.12 B
NK-SB-114	Med. yell. brown (10YR 5/4) fine to coarse sand	Made Land	Made Land	76.8	3730	5.2 U N	1.7 B	16.4 B	0.11 B
NK-SB-115	Med. yell. brown (10YR 5/4) fine to coarse sand	Made Land	Made Land	71.8	3220	6 U N	1.2 B	8.8 B	0.16 B

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Metals Concentrations in Walpole Series and Made Land Soils
Airport/Klondike Area, Pratt & Whitney, East hartford, Connecticut

Boring Number	Description	Soil Type		Constituent					
		Mapped	Determined	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury
NK-SB-100	Dusky brown (5YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	0.37 U	2.1 U	0.96 B	3.2 B	13.0	0.06 U
NK-SB-101	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	0.45 U	8.7	1.5 B	15.6	114	0.18
NK-SB-102	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	0.86	11.2	3.5 B	25.7	294	0.51
NK-SB-103	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	0.78	9.2	2.2 B	29.2	190	0.29
NK-SB-104	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	0.39 U	2.7	0.73 U	7.1	29.1	0.06 U
NK-SB-105	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	0.51 U	5.7	1.2 B	13.7	109	0.24
NK-SB-106	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	0.50 U	3.4	0.92 B	16.9	67.7	0.11 B
NK-SB-107	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	0.41 U	2.5 B	1.0 B	1.7 U	12.8	0.08 U
NK-SB-108	Dusky yell. brown (10YR 2/2) fine to med. sand	Made Land	Made Land	0.32 U	6.2	3.1 B	6.4	12.0	0.05 U
NK-SB-109	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	0.31 U	6.8	2.5 B	4.6 B	15.2	0.16
NK-SB-110	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	0.34 U	7.1	2.2 B	6.0 B	17.4	0.05 U
NK-SB-111	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	0.32 U	7.4	2.0 B	5.1 B	15.4	0.06 U
NK-SB-112	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	0.34 U	5.3	2.2 B	5.3	7.4	0.06 B
NK-SB-113	Dusky yell. brown (10YR 2/2) fine to coarse sand	Made Land	Made Land	0.33 U	4.2	1.8 B	4.0 B	13.8	0.06 U
NK-SB-114	Med. yell. brown (10YR 5/4) fine to coarse sand	Made Land	Made Land	0.32 U	6.1	8.1 B	5.3	3.8	0.06 U
NK-SB-115	Med. yell. brown (10YR 5/4) fine to coarse sand	Made Land	Made Land	0.34 U	5.5	2.9 B	5.2	3.5	0.15

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Metals Concentrations in Walpole Series and Made Land Soils
Airport/Klondike Area, Pratt & Whitney, East hartford, Connecticut

Boring Number	Description	Soil Type		Constituent					
		Mapped	Determined	Nickel	Selenium	Silver	Sodium	Thallium	Vanadium
NK-SB-100	Dusky brown (5YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	4.5 U	0.53 U	0.26 U N	50.5 B	1.1 U	7.4 B
NK-SB-101	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	7.8 B	0.62 U	0.31 U N	56.9 B	1.2 U	26.1
NK-SB-102	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	18.3	1.3 B	1.4 B N	92.2 B	1.8 U	33.6
NK-SB-103	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	12.4	1.3 B	0.71 B N	53.1 B	1.2 U	23.5
NK-SB-104	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	4.1 U	0.86 B	0.24 U N	49.9 B	0.97 U	11.6 B
NK-SB-105	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	5.6 U	1.0 B	0.33 U N	59.3 B	1.3 U	27.7
NK-SB-106	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	5.1 U	1.6 B	0.30 U N	65.0 B	1.2 U	20.1
NK-SB-107	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	4.7 U	0.60 U	0.28 U N	62.3 B	1.1 U	6.4 B
NK-SB-108	Dusky yell. brown (10YR 2/2) fine to med. sand	Made Land	Made Land	15.2	0.56 U	0.17 U N	37.4 B	0.6 U	18.1
NK-SB-109	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	4.3 B	0.33 U	0.21 U N	40.1 B	0.83 U	17.6
NK-SB-110	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	4.3 U	0.48 B	0.25 U N	48.6 B	1.0 U	19.4
NK-SB-111	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	4.2 U	0.37 U	0.25 U N	36.7 B	1.0 U	18.6
NK-SB-112	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	4.8 B	0.71 B	0.18 U N	43.7 B	0.73 U	12
NK-SB-113	Dusky yell. brown (10YR 2/2) fine to coarse sand	Made Land	Made Land	4.6 B	0.50 B	0.25 U N	44.0 B	1.0 U	15.5
NK-SB-114	Med. yell. brown (10YR 5/4) fine to coarse sand	Made Land	Made Land	8.2	0.39 U	0.19 U N	44.7 B	0.78 U	10.9
NK-SB-115	Med. yell. brown (10YR 5/4) fine to coarse sand	Made Land	Made Land	6.4 B	0.37 U	0.31 B N	36.3 B	0.74 U	8.7

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Metals Concentrations in Walpole Series and Made Land Soils
Airport/Klondike Area, Pratt & Whitney, East hartford, Connecticut

Boring Number	Description	Soil Type		Constituent		
		Mapped	Determined	Zinc	Tin	Silicon
NK-SB-100	Dusky brown (5YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	4.8 B	15.6 U	712 N
NK-SB-101	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	26.5	18.2 U	721 N
NK-SB-102	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	53.3	26.6 U	1240 N
NK-SB-103	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	43.6	17.3 U	520 N
NK-SB-104	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	6.0	14.3 U	882 N
NK-SB-105	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	23.7	19.4 U	878 N
NK-SB-106	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	13.6	17.6 U	532 N
NK-SB-107	Dusky yell. brown (10YR 2/2) fine to med. sand	Walpole Fine Sandy Loam	Made Land	8.6	16.4 U	869 N
NK-SB-108	Dusky yell. brown (10YR 2/2) fine to med. sand	Made Land	Made Land	9.6	9.7 U	369 N
NK-SB-109	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	10.6	12.3 U	666 N
NK-SB-110	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	11.2	14.8 U	993 N
NK-SB-111	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	9.4	14.7 U	934 N
NK-SB-112	Brownish black (5YR 2/1) fine to med. sand	Made Land	Walpole Fine Sandy Loam	10.5	10.8 U	625 N
NK-SB-113	Dusky yell. brown (10YR 2/2) fine to coarse sand	Made Land	Made Land	9.3	14.6 U	659 N
NK-SB-114	Med. yell. brown (10YR 5/4) fine to coarse sand	Made Land	Made Land	13.8	11.5 U	283 N
NK-SB-115	Med. yell. brown (10YR 5/4) fine to coarse sand	Made Land	Made Land	14.3	11.0 U	342 N

Table 3
Metals Concentrations in Glaciolacustrine Sediments
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Sample Information			Constituent				
Soil Boring ID	Sub-Area	Environmental Unit	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)
NA-SB-02	North Airport	Army Barracks	3.53	153	4.43	29.5	<28.6
NA-SB-13	North Airport	Pickle Company	4.09	138	<4.56	34.4	<30.4
NA-SB-16	North Airport	Pickle Company	5.9	188	5.69	37.1	<30
NK-SB-08	North Klondike	Ex. Storage Area	4.98	312	8.13	55.8	<30.1
NK-SB-09	North Klondike	Ex. Storage Area	1.87	34.3	<3.8	<6.33	<25.3
NK-SB-10	North Klondike	Ex. Storage Area	<1.24	48.4	<3.71	<6.19	<24.8
NK-SB-13	North Klondike	Ex. Storage Area	6.9	254	<4.82	48.2	<32.1
NK-SB-17	North Klondike	Ex. Storage Area	5.33	286	<4.57	48.2	<30.5
NK-SB-24	North Klondike	X-430	6.38	322	8.31	45.1	<30.8
NK-SB-26	North Klondike	X-415	9.6	338	7.74	54.8	<29.2
NK-SB-27	North Klondike	X-415	9.09	265	6.3	50.3	<30.7
NK-SB-27	North Klondike	X-415	9.84	295	7.98	54.3	<33.2
NK-SB-28	North Klondike	X-415	8.85	263	6.64	47.8	<33.2
NK-SB-29	North Klondike	X-415	7.62	286	6.21	51.1	<28.2
NK-SB-59	North Klondike	X-194	8.95	265	7.11	43.6	<31.6
NK-SB-232	North Klondike	X-407	7.94	259	6.25	50.1	<27.8
NK-SB-236	North Klondike	X-407	7.16	292	6.59	55.2	<30.6
NK-SB-333	North Klondike	X-407	<1.2	21.5	<0.12	6	2.2

Table 3
Metals Concentrations in Glaciolacustrine Sediments
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Sample Information			Constituent				
Soil Boring ID	Sub-Area	Environmental Unit	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
NA-SB-02	North Airport	Army Barracks	<0.286	26.2	<1.43	<7.15	87.5
NA-SB-13	North Airport	Pickle Company	<.304	21.8	<1.52	<7.61	84.4
NA-SB-16	North Airport	Pickle Company	<0.3	32.1	<1.5	<7.49	91.5
NK-SB-08	North Klondike	Ex. Storage Area	<.301	52.7	<1.51	<7.53	130
NK-SB-09	North Klondike	Ex. Storage Area	<0.253	<12.7	<1.27	<6.33	13.7
NK-SB-10	North Klondike	Ex. Storage Area	<0.248	<12.4	<1.24	<6.19	14.1
NK-SB-13	North Klondike	Ex. Storage Area	<0.321	43.4	<1.61	<8.04	106
NK-SB-17	North Klondike	Ex. Storage Area	<0.305	43.1	<1.52	<7.62	107
NK-SB-24	North Klondike	X-430	<0.308	39.5	<1.54	<7.69	109
NK-SB-26	North Klondike	X-415	<0.292	52.4	<1.46	<7.3	129
NK-SB-27	North Klondike	X-415	<0.307	44.3	<1.54	<7.69	119
NK-SB-27	North Klondike	X-415	<0.332	44.2	<1.66	<8.31	131
NK-SB-28	North Klondike	X-415	<0.332	44.3	<1.66	<8.3	115
NK-SB-29	North Klondike	X-415	<0.282	46.3	<1.41	<7.06	116
NK-SB-59	North Klondike	X-194	<0.316	39	<1.58	<7.9	113
NK-SB-232	North Klondike	X-407	0.178	47.3	<1.39	<6.94	121
NK-SB-236	North Klondike	X-407	0.169	46.4	<1.53	<7.66	131
NK-SB-333	North Klondike	X-407	<0.18	8.5	<0.98	<3.7	<18.3

Table 4
Statistical Analysis of Walpole Series Soils Metals Concentrations
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Statistic	*Aluminum*	*Arsenic*	*Barium*	*Beryllium*	*Cadmium*	*Chromium*	*Cobalt*	*Copper*	*Lead*	*Mercury*	*Nickel*
Mean	5788.57	4.28	10.81	0.16		6.06	2.27	5.07	10.93	0.07	4.29
Standard Error	887.81	2.63	1.29	0.02		0.43	0.16	0.24	2.22	0.02	0.89
Median	4860	1.7	10.4	0.16		6.1	2.2	5.2	13.8	0.03	4.3
Mode				0.21			2.2				
Standard Deviation	2348.93	6.95	3.41	0.05		1.14	0.39	0.63	5.87	0.06	2.35
Sample Variance		48.31	11.63	0.00		1.30	0.15	0.39	34.47	0.00	5.53
Kurtosis	-2.51	6.89	-0.50	-2.45		-0.66	0.42	1.01	-2.13		
Skewness	0.24	2.62	0.69	-0.05		-0.48	0.75	-0.48	-0.41		
Range	5400	19.05	9.6	0.11		3.2	1.1	2	13.9	0.135	6.1
Minimum	3220	0.95	6.8	0.1		4.2	1.8	4	3.5	0.025	2.1
Maximum	8620	20	16.4	0.21		7.4	2.9	6	17.4	0.16	8.2
Sum	40520	29.95	75.7	1.12		42.4	13.6	35.5	76.5	0.455	30.05
Count	7	7	7	7		7	6	7	7	7	7
Confidence Level (95.0%)	1740.08	5.15	2.53	0.04		0.84	0.31	0.46	4.35	0.05	1.74

Table 4
Statistical Analysis of Walpole Series Soils Metals Concentrations
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Statistic	*Selenium*	*Silver*	*Sodium*	*Vanadium*	*Zinc*	*Silicon*
Mean	0.29		42.01	14.67	11.30	643.14
Standard Error	0.06		1.70	1.57	0.76	101.01
Median	0.19		43.7	15.5	10.6	659
Mode						
Standard Deviation	0.16		4.51	4.16	2.00	267.24
Sample Variance	0.03		20.32	17.35	4.00	71415.14
Kurtosis			-1.07	-1.78	-1.03	-1.08
Skewness			-0.07	-0.30	0.78	-0.08
Range	0.335		12.3	10.7	5	710
Minimum	0.165		36.3	8.7	9.3	283
Maximum	0.5		48.6	19.4	14.3	993
Sum	1.71		294.1	102.7	79.1	4502
Count	6		7	7	7	7
Confidence Level (95.0%)	0.13		3.34	3.09	1.48	197.97

Table 5
Statistical Analysis of Made Land Soils Metals Concentrations
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Statistic	*Aluminum*	*Arsenic*	*Barium*	*Beryllium*	*Cadmium*	*Chromium*	*Cobalt*	*Copper*	*Lead*	*Mercury*	*Nickel*
Mean	5462.00	3.71	12.46	0.16	0.18	5.45	2.07	5.89	16.90	0.06	3.88
Standard Error	636.43	1.83	2.22	0.02	0.01	0.51	0.25	1.34	5.85	0.02	0.73
Median	4895	1.75	10.4	0.145	0.1675	5.8	2.2	5.25	13.3	0.03	2.55
Mode		1.7		0.21	0.16		2.2	5.3		0.03	
Standard Deviation	2012.57	5.78	6.66	0.07	0.03	1.63	0.75	4.25	18.49	0.05	2.19
Sample Variance		33.40	44.33	0.01	0.00	2.65	0.56	18.02	341.99	0.00	4.81
Kurtosis	-1.24	9.49	4.10	0.06	4.57	-0.55	-0.62	6.31	8.22	-0.45	0.31
Skewness	0.73	3.06	1.94	0.60	2.17	-0.68	-0.38	2.05	2.75	1.19	1.16
Range	5400	19.05	21.4	0.24	0.095	4.9	2.18	16.815	64.2	0.135	6.1
Minimum	3220	0.95	6.8	0.06	0.155	2.5	0.92	0.085	3.5	0.025	2.1
Maximum	8620	20	28.2	0.3	0.25	7.4	3.1	16.9	67.7	0.16	8.2
Sum	54620	37.05	112.1	1.61	1.765	54.5	18.62	58.885	169	0.63	34.95
Count	10	10	9	10	10	10	9	10	10	10	9
Confidence Level (95.0%)	1247.3793	3.5822113	4.3498714	0.0441608	0.0181906	1.0084228	0.490735	2.6313722	11.461779	0.0339224	1.4327503
95% Percentile Level	9151.27	14.30	24.84	0.29	0.23	8.43	3.47	13.67	50.80	0.16	7.96

Table 5
Statistical Analysis of Made Land Soils Metals Concentrations
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Statistic	*Selenium*	*Silver*	*Sodium*	*Vanadium*	*Zinc*	*Silicon*
Mean	0.43	0.12	44.06	14.73	11.09	627.20
Standard Error	0.15	0.01	2.97	1.54	0.66	79.20
Median	0.28	0.125	43.7	16.55	10.55	642
Mode	0.185	0.125				
Standard Deviation	0.46	0.02	8.90	4.87	2.08	250.44
Sample Variance	0.21	0.00	79.26	23.74	4.34	62718.62
Kurtosis	7.08	-1.34	4.03	-1.19	-1.30	-1.27
Skewness	2.59	0.04	1.84	-0.60	0.60	0.09
Range	1.435	0.065	28.7	13.7	5.7	710
Minimum	0.165	0.085	36.3	6.4	8.6	283
Maximum	1.6	0.15	65	20.1	14.3	993
Sum	3.89	1.04	396.5	147.3	110.9	6272
Count	9	9	9	10	10	10
Confidence Level (95.0%)	0.2977052	0.0149199	5.8163046	3.0200153	1.2906839	155.21929
95% Percentile Level	1.28	0.16	60.61	23.66	14.91	1086.28

Table 6
Statistical Analysis of Glaciolacustrine Sediments Metals Concentrations
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Statistic	*Arsenic*	*Barium*	*Cadmium*	*Chromium*	*Lead*	*Mercury*	*Nickel*	*Zinc*
Mean	6.07	223.34	5.12	39.88	14.21	0.15	35.78	95.96
Standard Error	0.70	24.00	0.62	4.24	0.76	0.00	3.64	9.66
Median	6.64	264.00	6.23	48.00	15.13	0.15	43.25	111.00
Mode		286.00		48.20	16.60	0.17	44.30	131.00
Standard Deviation	2.96	101.82	2.63	17.98	3.21	0.02	15.45	40.97
Sample Variance	8.77	10368.12	6.91	323.20	10.29	0.00	238.63	1678.82
Kurtosis	-0.63	-0.20	-1.17	0.59	12.95	3.55	-0.17	0.97
Skewness	-0.62	-1.05	-0.52	-1.37	-3.40	-1.54	-1.06	-1.49
Range	9.24	316.50	8.25	52.71	14.40	0.09	46.50	121.85
Minimum	0.60	21.50	0.06	3.10	2.20	0.09	6.20	9.15
Maximum	9.84	338.00	8.31	55.80	16.60	0.18	52.70	131.00
Sum	109.25	4020.20	92.17	717.76	255.75	2.68	644.05	1727.35
Count	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00
Confidence Level (95.0%)	1.37	47.04	1.21	8.31	1.48	0.01	7.14	18.93
95% Percentile Level	**10.70**	**373.05**	**9.17**	**65.19**	**17.71**	**0.18**	**58.40**	**152.44**

Table 6
Elemental Concentrations in Soils and Surficial Materials of the Conterminous United States
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Constituent	CAS Number	Concentrations Detected in Soil (mg/kg)	
		Average	Observed Range
Aluminum (fume or dust)	7429-90-5	66,000	700 → 100,000
Antimony	7440-36-0	0.67	<1 → 8.8
Arsenic	7440-38-2	7.2	<0.1 → 97
Barium	7440-39-3	580	10 → 5,000
Beryllium	7440-41-7	0.92	<1 → 15
Boron (water soluble)	7440-42-8	34	<20 → 3000
Cadmium	7440-43-9	0.06	0.01 → 0.7
Calcium	7440-70-2	24,000	<150 → 320,000
Cerium	7440-45-1	86	<150 → 300
Chromium	7440-47-3	54	1.0 → 2,000
Cobalt	7440-48-4	10	<3 → 70
Copper	7440-50-8	25	<1 → 700
Gallium	7440-55-3	19	<5 → 70
Iron	7439-89-6	25,000	100 → 100,000
Lanthanum	7439-91-0	41	30 → 200
Lead	7439-92-1	19	<10 → 700
Manganese	7439-96-5	560	<1 → 7,000
Mercury	7439-97-6	0.089	<0.01 → 4.6
Molybdenum	7439-98-7	----	<3 → 7.0
Nickel	7440-02-0	19	<5 → 700
Phosphorus (white or yellow)	7723-14-0	420	20 → 6,000
Potassium	7440-09-7	23000	50 → 70,000
Selenium	7782-49-2	0.39	<0.1 → 4.3
Sodium	7440-23-5	12000	<500 → 100,000
Strontium	7440-24-6	240	<5 → 3,000
Vanadium (fume or dust)	7440-62-2	76	<7 → 500
Zinc (fume or dust)	7440-66-6	60	<5 → 2,900

Reference: Shacklette, H.T., and J.G. Boerngen, 1984, "Elemental Concentrations in Soils and Surficial Materials of the Conterminous U.S.," USGS Professional Paper 1270, U.S. government Printing Office, Washington, DC.

ATTACHMENT A

Field Data Sheets

Soil Sampling Field Data Sheet

FUSS&O'NEILL: Environmental Field Services

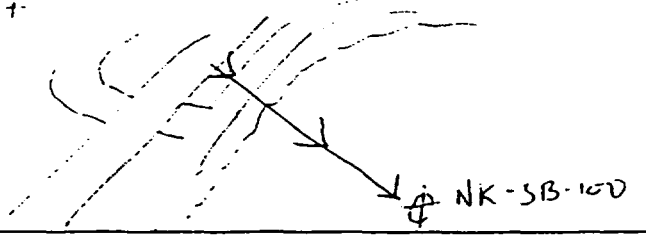
Client/Project Name: PRATT & WHITNEY EAST HARTFORD | Project #: 93-221A9

Project Location: EAST HARTFORD CT | Sampling Location: NK-5B-100

Sample #: 10001145

Sample Location Info

At the culvert crossing airport road - cross stream and head due South east.



Sample Data

Container	Quantity	Preservative
4oz Glass	1 ✓	NSJS

Date: 12-17-93 Time: 1026

Sampler: JMT / SMS Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) Tongue depressor

Field decon: Yes / (No SMS) / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: ——— Instrument: ———

Sample Depth: Below organics Core Length: ———

Sample Description: Sediment / (Soil Type) (ex. Lacustrine, (Wetland), B Horizon, Outwash, Etc.)

Munsell Color: DUSKY BROWN 5YR 2/2 Grain Size: FINE TO MED. SAND

Sample Description Foreign Material: N/A

Appearance: DUSKY BROWN FINE TO MED SAND

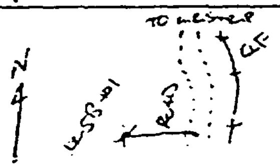
Comments:

Soil Sampling Field Data Sheet

FUSS&O'NEILL Environmental Field Services

Client/Project Name: PRATT & WHITNEY	Project #: 93-22129
Project Location: EAST HARTFORD, CT	Sampling Location
Sample #: 10001146	NK-SB-101

Sample Location Info



Sample Data

Sample Data	Container	Quantity	Preservative
Date: 12-17-93 Time: 1107 Sampler: SMT/SMS Weather: 40° SUN Sampling Device: Auger / Core Sampler / Shovel / Split Spoon Trowel / (Other) TONGUE DEPRESSOR Field decon: Yes / No / (Dedicated) Type of Sample: (Grab) / Composite / Other ______	4OZ. GLASS	1 ✓	AS IS

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW ORGANICS Core Length: —

Sample Description: Sediment / (Soil Type) (ex. Lacustrine, (Wetland) B Horizon, Outwash, Etc.)

Munsell Color: DUSKY ~~DARK~~ YELLOWISH BROWN SMS 10YR 2/2 Grain Size: FINE TO MED SAND

Sample Description Foreign Material: N/K

Appearance: DUSKY ~~DARK~~ SMS YELLOWISH BROWN FINE TO MED SAND

Comments:

Soil Sampling Field Data Sheet

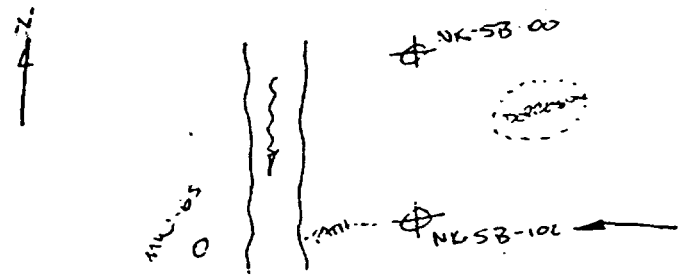
FUSS&O'NEILL
Environmental
Field Services

Client/Project Name: PRATT & WHITNEY EAST HARTFORD | Project #: 93-221A9

Project Location: EAST HARTFORD, CT | Sampling Location: NK-SB-102

Sample #: 10001147

Sample Location Info



GO SOUTH PAST DEPRESSION, STAYING INSIDE SURFACE WATER OF CO-2 MW-6S AND SOUTH PATH WITH BRUSH

Sample Data

Container	Quantity	Preservative
4 oz. GLASS	1	AS IS

Date: 12-17-93 Time: 1040

Sampler: JMT | SMS Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) TONGUE DEPRESSOR

Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BAG GRAB Core Length: —

Sample Description: Sediment / (Soil Type) (ex. Lacustrine, (Wetland), B Horizon, Outwash, Etc.)

Munsell Color: DUSKY YELLOWISH BROWN 10YR 2/2 Grain Size: FINE TO MED SAND

Sample Description Foreign Material: N/A

Appearance: DUSKY YELLOWISH BROWN FINE TO MED SAND

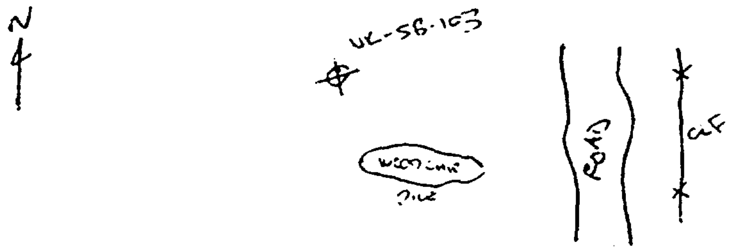
Comments:

Soil Sampling Field Data Sheet

FUSS&O'NEILL Environmental Field Services

Client/Project Name: PRATT & WHITNEY	Project #: 93-22149
Project Location: EAST HARTFORD, CT	Sampling Location: NK-SB-103
Sample #: 10001148

Sample Location Info



Sample Data

Date: 12-17-93 Time: 1124

Sampler: JMT | SMS Weather: GOOD SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon / Trowel / (Other) TONGUE DEPRESSOR

Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite / Other ______

Container	Quantity	Preservative
4OZ. GLASS	1 ✓	AS IS

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW WOODCHIPS Core Length: —

Sample Description: Sediment / (Soil Type) (ex. Lacustrine, (Wetland), B Horizon, Outwash, Etc.)

Munsell Color: DUSKY YELLOWISH BROWN 10YR 2/2 Grain Size: FINE TO MED SAND

Sample Description Foreign Material: WOOD CHIPS

Appearance: DUSKY YELLOW BROWN FINE TO MED SAND

Comments:

Soil Sampling Field Data Sheet

FUSS&O'NEILL Environmental Field Services

Client/Project Name: PRATT & WHITNEY

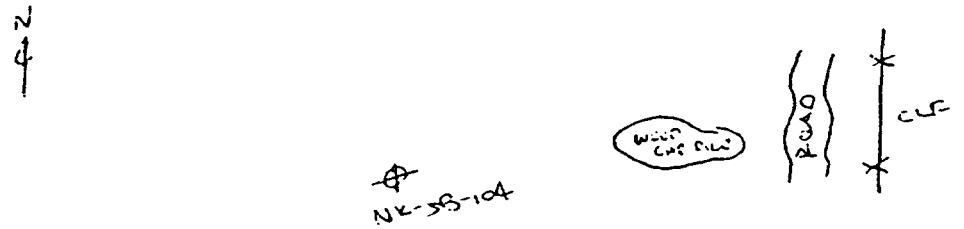
Project #: 93-221 A9

Project Location: EAST HARTFORD, CT

Sampling Location: NK-SB-104

Sample #: 10001149

Sample Location Info



Sample Data

Container	Quantity	Preservative
4 OZ. GLASS	1	ASIS

Date: 12-17-93 Time: 1133

Sampler: SMT / SMS Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) TEFLON SPATULA

Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW ORGANICS Core Length: —

Sample Description: Sediment / (Soil Type) (ex. Lacustrine, (Wetland), B Horizon, Outwash, Etc.)

Munsell Color: DUSKY YELLOWISH BROWN 10YR 2/2 Grain Size: FINE TO MED SAND

Sample Description Foreign Material: N/A

Appearance: SEE ABOVE

Comments:

Soil Sampling Field Data Sheet

FUSS&O'NEILL Environmental Field Services

Client/Project Name: PRATT & WHITNEY	Project #: 93-221A9
Project Location: EAST HARTFORD, CT	Sampling Location: NL-SB-105
Sample #: 10001150	

Sample Location Info

Sample Data

Container	Quantity	Preservative
4 OZ-GLASS	1 ✓	ASIS

Date: 12-17-93 Time: 1147

Sampler: JMT / SMD Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) TEFLON DISPOSABLE

Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW ORGANICS Core Length: —

Sample Description: Sediment / (Soil Type) (ex. Lacustrine, (Wetland), B Horizon, Outwash, Etc.)

Munsell Color: DUSKY YELLOWISH BROWN 10YR 2/2 Grain Size: FINE TO MED SAND

Sample Description Foreign Material: WOOD CHIPS

Appearance: SEE ABOVE

Comments:

Soil Sampling Field Data Sheet

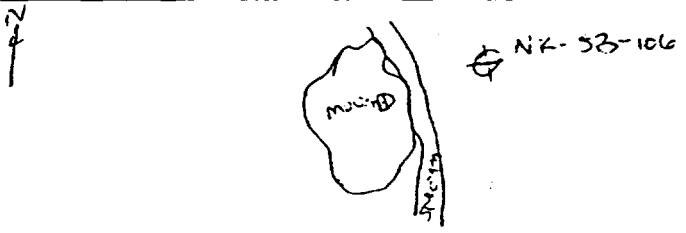
FUSS&O'NEILL Environmental Field Services

Client/Project Name: PRATT & WHITNEY | Project #: 93-22149

Project Location: EAST HARTFORD | Sampling Location: NK-SB-106

Sample #: 10001151-

Sample Location Info



Sample Data

Container	Quantity	Preservative
4 oz. GLASS	1	AS IS

Date: 12-17-93 Time: 1238

Sampler: JMT/SMS Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) TONGUE DEPRESSOR

Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW ORGANICS Core Length: —

Sample Description: Sediment / (Soil Type) (ex. Lacustrine, Wetland, B Horizon, Outwash, Etc.)

Munsell Color: DUSKY YELLOWISH BROWN 10 YR 2/2 Grain Size: FINE TO MED SAND

Sample Description Foreign Material: N/A

Appearance: SEE ABOVE

Comments:

Soil Sampling Field Data Sheet

FUSS&O'NEILL
Environmental
Field Services

Client/Project Name: PRATT & WHITNEY
Project #: 93-221A9
Project Location: EAST HARTFORD, CT
Sample #: 100152
Sampling Location: NK-SB-107

Sample Location Info

Sample Data

Container	Quantity	Preservative
4 oz. GLASS	1	AS IS

Date: 12-17-93 Time: 1220
Sampler: JMT/SMS Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) TEFLON DEPRESSOR
Field decon: Yes / No / (Dedicated)

Type of Sample (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW ORGANICS Core Length: —

Sample Description: Sediment / Soil Type (ex. Lacustrine, Wetland, B Horizon, Outwash, Etc.)

Munsell Color: DARK YELLOWISH BROWN 10YR 2/2 Grain Size: FINE TO MED SAND

Sample Description Foreign Material: N/A

Appearance: SEE ABOVE

Comments:

Soil Sampling Field Data Sheet

FUSS&O'NEILL Environmental Field Services

Client/Project Name: PRATT & WHITNEY	Project #: 93-221-A7
Project Location: EAST HARTFORD CT	Sampling Location: NK-SB-108
Sample #: 1000153	

Sample Location Info

Sample Data

Container	Quantity	Preservative
4 oz. GLASS	1	ASIS

Date: 12-17-93 Time: 1310

Sampler: JMT / SMS Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) TONGUE DEPRESSOR

Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW ORGANICS Core Length: —

Sample Description: Sediment / Soil Type (ex. Lacustrine, Wetland, B Horizon, Outwash, Etc.)

Munsell Color: DARK YELLOWISH BROWN 10YR 2/2 Grain Size: FINE TO MED. SAND

Sample Description Foreign Material: N/A

Appearance: SEE ABOVE

Comments:

Soil Sampling Field Data Sheet

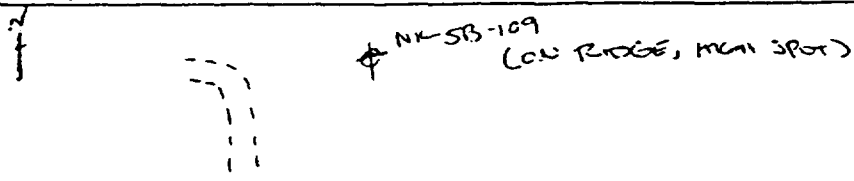
FUSS&O'NEILL Environmental Field Services

Client/Project Name: PRATT & WHITNEY | Project #: 93-221A9

Project Location: EAST HARTFORD, CT | Sampling Location: NK-SB-109

Sample #: 10001154

Sample Location Info



Sample Data

Container	Quantity	Preservative
4 oz. GLASS	1 ✓	AS IS

Date: 12-17-93 Time: 1440

Sampler: JMT / SMS Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) TONGUE DEPRESSOR

Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW ORGANICS Core Length: —

Sample Description: Sediment / (Soil Type) (ex. Lacustrine, Wetland, B Horizon, Outwash, Etc.)

Munsell Color: BROWNISH BLACK 5YR 2/1 Grain Size: FINE TO MED SAND

Sample Description Foreign Material: N/A

Appearance: SEE ABOVE

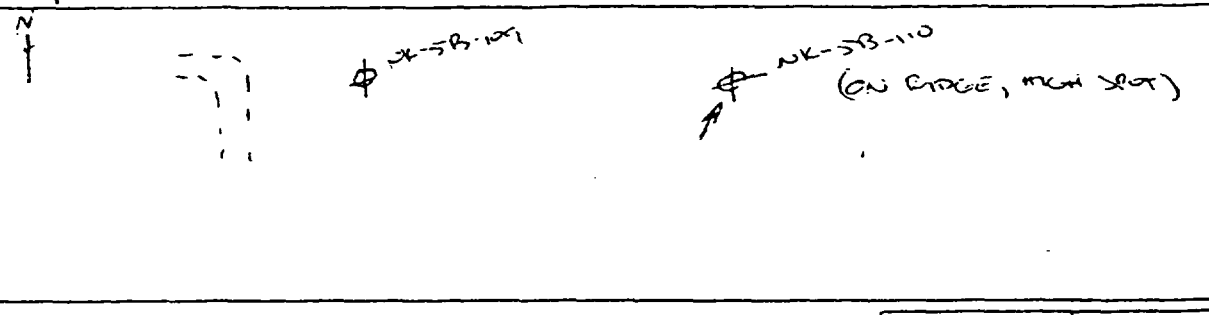
Comments:

Soil Sampling Field Data Sheet

FUSS&O'NEILL
Environmental
Field Services

Client/Project Name: PRATT & WHITNEY
Project #: 93-224A9
Project Location: EAST HARTFORD, CT
Sampling Location: NK-SB-110
Sample #: 1000 11 55

Sample Location Info



Sample Data

Container	Quantity	Preservative
4 oz. GLASS	1 ✓	AS IS

Date: 12-17-93 Time: 1445
Sampler: JMT/SMS Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) TOMCAT DEPRESSOR
Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW ORGANICS Core Length: —

Sample Description: Sediment / Soil Type (ex. Lacustrine, Wetland, B Horizon, Outwash, Etc.)

Munsell Color: BLUISH BLACK 5YR 2/1 Grain Size: FINE TO MED SAND

Sample Description Foreign Material: N/A

Appearance: SEE ABOVE

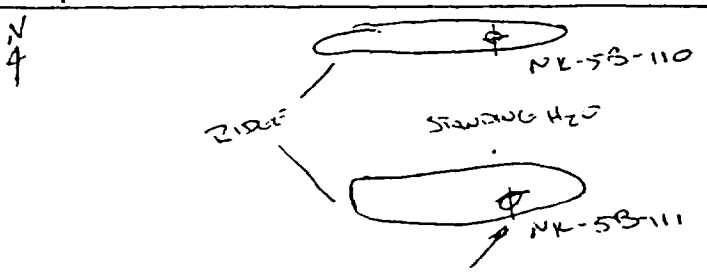
Comments:

Soil Sampling Field Data Sheet

FUSS&O'NEILL Environmental Field Services

Client/Project Name: PRATT & WHITNEY
Project #: 93-221 A9
Project Location: EAST HARTFORD, CT
Sampling Location: NK-SB-111
Sample #: 10001157

Sample Location Info



Sample Data

Container	Quantity	Preservative
4 oz. GLASS	1	AS IS

Date: 12-17-93 Time: 1452
Sampler: JMT / SMS Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / Other TEFLON SCOOP
Field decon: Yes / No / Dedicated

Type of Sample: Grab / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW ORGANICS Core Length: —

Sample Description: Sediment / Soil Type (ex. Lacustrine, Wetland, B Horizon, Outwash, Etc.)

Munsell Color: BROWNISH BLACK 5YR 2/1 Grain Size: FINE TO MED. SAND

Sample Description Foreign Material: N/A

Appearance: SEE ABOVE

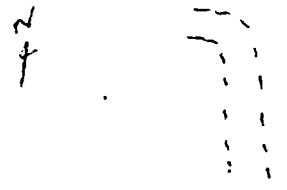
Comments:

Soil Sampling Field Data Sheet

FUSS&O'NEILL
Environmental
Field Services

Client/Project Name: PRATT & WHITNEY
Project #: 93-221-A9
Project Location: EAST HARTFORD CT
Sampling Location: NK-SB-112
Sample #: 100011 SO

Sample Location Info



Sample Data

Container	Quantity	Preservative
4 OZ. GLASS	1	AS IS

Date: 12-17-93 Time: 1501
Sampler: JMT / SMS Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) TEFLON DEPRESSOR.
Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW ORGANICS Core Length: —

Sample Description: Sediment / Soil Type (ex. Lacustrine, Wetland, B Horizon, Outwash, Etc.)

Munsell Color: BROWNISH BLACK 5YR2/1 Grain Size: FINE TO MED SAND

Sample Description Foreign Material: N/A

Appearance: SEE ABOVE

Comments:

Soil Sampling Field Data Sheet

FUSS&O'NEILL Environmental Field Services

Client/Project Name: PRATT & WHITNEY

Project #: 93-221A9

Project Location: EAST HARTFORD, CT

Sampling Location: NK-SB-113

Sample #: 10001158

Sample Location Info

Sample Data

Container	Quantity	Preservative
4oz. GLASS	1 ✓	ASIS

Date: 12-17-93 Time: 1425

Sampler: JMT / SMS Weather: GOOD SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) TONGUE DEPRESSOR

Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BLACK ORGANICS Core Length: —

Sample Description: Sediment / (Soil Type) (ex. Lacustrine, (Wetland), B Horizon, Outwash, Etc.)

Munsell Color: DUSKY YELLOWISH BROWN 10YR 2/2 Grain Size: FINE, MED. & COARSE SAND

Sample Description Foreign Material: N/A

Appearance: SEE ABOVE

Comments:

Soil Sampling Field Data Sheet

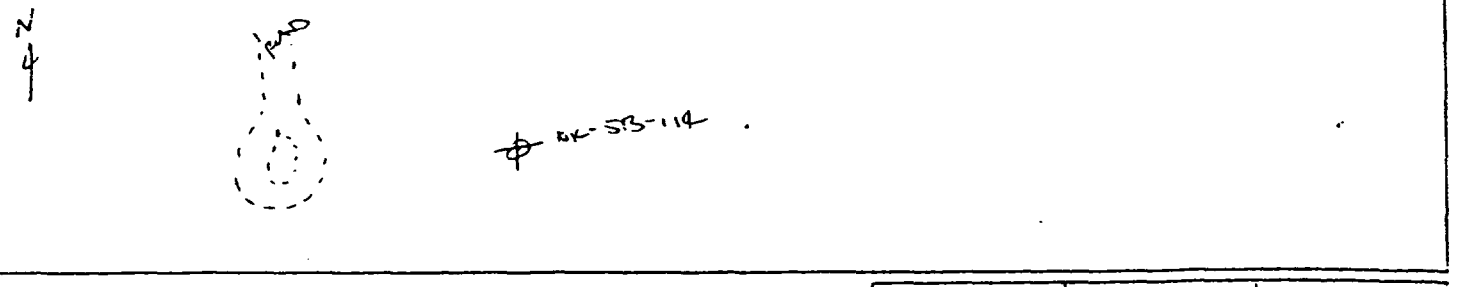
FUSS&O'NEILL Environmental Field Services

Client/Project Name: PRATT & WHITNEY | Project #: 93-ZZ1A9

Project Location: EAST HARTFORD, CT | Sampling Location: NK-SB-114

Sample #: 10001159

Sample Location Info



Sample Data

Container	Quantity	Preservative
4 oz. GLASS	1	AS IS

Date: 12-17-93 Time: 1405

Sampler: JMT | SMS Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) TONGUE DEPRESSOR

Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW GRADE'S Core Length: —

Sample Description: Sediment (Soil Type) (ex. Lacustrine, Wetland, B Horizon, Outwash, Etc.)

Munsell Color: MED YELLOWISH BROWN 10YR 5/4 Grain Size: FINE MED & COARSE SAND

Sample Description Foreign Material: N/A

Appearance: SEE ABOVE

Comments:

Soil Sampling Field Data Sheet

FUSS&O'NEILL Environmental Field Services

Client/Project Name: PRATT & WHITNEY
Project #: 93-221A9
Project Location: EAST HARTFORD, CT
Sampling Location: NK-SB-115
mple #: 10001160

Sample Location Info

Sample Data

Container	Quantity	Preservative
4oz. GLASS	1 ✓	ICE

Date: 12-17-93 Time: 1412
Sampler: JMT / SMS Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) TONGUE DEPRESSOR
Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW ORGANICS Core Length: —

Sample Description: Sediment / (Soil Type) (ex. Lacustrine, Wetland, B Horizon, Outwash, Etc.)

Munsell Color: MOD. YELLOWISH BROWN 10YR 5/4 Grain Size: FINE, MED. & COARSE SAND

Sample Description Foreign Material: N/A

Appearance:

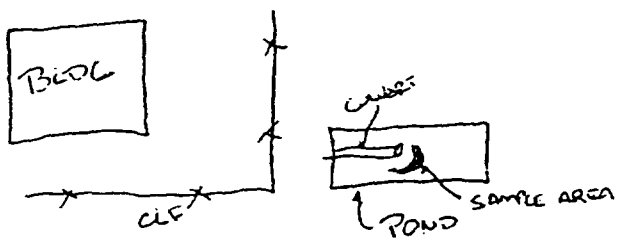
Comments:

Soil Sampling Field Data Sheet

FUSS&O'NEILL Environmental Field Services

Client/Project Name: PRATT & WHITNEY	Project #: 93-221A9
Project Location: EAST HARTFORD, CT	Sampling Location: NH-WC-100
Sample #: 10001101	

Sample Location Info



Sample Data

Container	Quantity	Preservative
1l Amber	2 ✓	ICE

Date: 12-17-93 Time: 1350
Sampler: _____ Weather: 40° SUN

Sampling Device: Auger / Core Sampler / Shovel / Split Spoon
Trowel / (Other) SURFACE WATER SCOOP
Field decon: Yes / No / (Dedicated)

Type of Sample: (Grab) / Composite /
Other _____

Description Data

Organic Vapor Reading: — Instrument: —

Sample Depth: BELOW ORGANICS Core Length: —

Sample Description (Sediment) / Soil Type (ex. Lacustrine, Wetland, B Horizon, Outwash, Etc.)

Munsell Color: BROWNISH BLACK 5YR 2/1 Grain Size: SAND FINE TO MED SAND

Sample Description Foreign Material: ORGANICS

Appearance: SEE ABOVE, SATURATED

Comments: AT END CULVERT IS RIP RAP NO SEDIMENT. SEE SKETCH FOR LOCATION

TECHNICAL MEMORANDUM 5
SOIL BORING INSTALLATION AND SOIL SAMPLING

SUMMARY
SITE INVESTIGATION AND REMEDIATION REPORT
AIRPORT/KLONDIKE AREA
AT
PRATT & WHITNEY
EAST HARTFORD, CONNECTICUT
EPA ID No. CTD990672081

Prepared for:

PRATT & WHITNEY
400 Main Street
East Hartford, Connecticut 06108

Prepared by:

LOUREIRO ENGINEERING ASSOCIATES
100 Northwest Drive
Plainville, Connecticut 06062

LEA Comm. No. 68V8124

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Acronyms

AEL	Averill Environmental Laboratory, Inc.
DEP	State of Connecticut Department of Environmental Protection
DPH	State of Connecticut Department of Public Health
FID	Flame-Ionization Detector
F&O	Fuss & O'Neill, Inc.
H&A	Haley & Aldrich, Inc.
LEA	Loureiro Engineering Associates, P.C.
M&E	Metcalf & Eddy, Inc.
NTU	Nephelometric Turbidity Unit
P&W	Pratt & Whitney
PID	Photoionization Detector
PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
QUANT	Quanterra Environmental Services, Inc.
RCSA	Regulations of Connecticut State Agencies
SOP	Standard Operating Procedure
TM	Technical Memoranda
USTM	Unit-Specific Technical Memorandum
VOC	Volatile Organic Compound

1. INTRODUCTION

1.1 Purpose and Objective

This Technical Memorandum (TM) presents the methodology and results of the soil boring installation and the soil sampling methodology used in the Airport/Klondike Area (Site) of the Pratt & Whitney (P&W) facility located at 400 Main Street (Main Street facility) in the Town of East Hartford, Connecticut. Soil borings were installed as part of the Site investigation activities to characterize the nature and the distribution of contaminants in the unconsolidated materials at the Site.

1.2 Background

The Airport/Klondike Area is located on the eastern portion of the P&W Main Street facility on the east side of the main plant, north of Brewer Street and south of Silver Lane. The Airport/Klondike Area consists of four study areas that include the North and South Airport Areas and the North and South Klondike Areas. Previous investigations at the Site performed from 1990 through 1993 resulted in the installation and sampling of soil borings, groundwater monitoring wells and temporary wellpoints throughout the Airport/Klondike Area. A brief description of the monitoring well installations is provided below. For a more detailed account of the monitoring well installations refer to TM 1, *Monitoring Well Installation and Development and Soil Sampling*.

The majority of historical soil borings installed at the Site were installed as part of the installation of the monitoring well network. In the North Airport Area, monitoring wells NA-MW-01 through NA-MW-04 were installed in October 1991 during the Site-Wide Environmental Monitoring Program at the Main Street facility by Haley & Aldrich, Inc. (H&A). In the North Airport Area, piezometers NA-PZ-01 through NA-PZ-12 were installed in November 1991 during the Site-Wide Environmental Monitoring Program.

In the North Klondike Area, wells NK-MW-01 through NK-MW-05 were installed in February 1990 during the Preliminary Reconnaissance Survey of the Airport/Klondike Area by Westinghouse Environmental and Geotechnical Services, Inc. (Westinghouse). Wells NK-MW-06 and NK-MW-07 were installed in October 1991 during the Site-Wide Environmental Monitoring Program. Wells NK-MW-08 through NK-MW-10 were installed in October 1992 during the Environmental Assessment of the Former PCB Storage Building by H&A. Wells NK-MW-12 through NK-MW-17 were installed in about April 1993 during the Klondike Area

Site Investigation by Metcalf & Eddy, Inc. (M&E).

In the South Klondike Area, wells SK-MW-01 through SK-MW-08S and SK-MW-8D were installed in February 1990 during the Preliminary Reconnaissance Survey. Wells SK-MW-09 through SK-MW-13 were installed in October 1991 during the Site-Wide Environmental Monitoring Program. Wells SK-MW-14I, SK-MW-15I, and SK-MW-16 were installed in about April 1993 during the Klondike Area Site Investigation.

In the South Airport Area, monitoring wells SA-MW-01 and SA-MW-02I were installed in February 1990 during the Preliminary Reconnaissance Survey. Wells SA-MW-03 through SA-MW-05S and SA-MW-05I were installed in October 1991 during the Site-Wide Environmental Monitoring Program. In the South Airport Area, piezometers SA-PZ-01 and SA-PZ-02 were installed in November 1991 during the Site-Wide Environmental Monitoring Program.

Background soil metals data were collected from undisturbed areas of the North Klondike, as part of the remediation of the X-194 Test Stand in the North Klondike Area, to characterize the nature and distribution of natural metals in the unconsolidated materials at the Site. There were sixteen soil sampling locations, NK-SB-100 through NK-SB-115, completed to provide a comparison between the natural soils and the Made Land present in the North Klondike. The analysis of these background soils is discussed in TM 4 *Background Soil Sampling and Analysis.*

1.3 Scope

This TM covers the installation, sampling, and rationale for the soil borings advanced in the Airport/Klondike Area. The methods and techniques discussed are those used by Loureiro Engineering Associates, P.C. (LEA) during the period from approximately 1994 through 1998. These methods and techniques have also been used, to a greater or lesser extent, by other consultants and contractors working at the Site at various times. However, this TM does not cover specific chemical analyses of soil samples collected during the soil boring installation as these data are discussed in the appropriate Unit-Specific Technical Memorandum (USTM).

1.4 General Geologic and Hydrogeologic Conditions

The geologic and hydrogeologic characteristics of the Site are discussed in detail in the main body of this report. In general, the surficial materials in which the majority of the monitoring wells are screened, consist of medium to fine grained sands with trace levels of fine gravels and coarse sands. These sediments are generally post-glacial, fluvial deposits associated with the Connecticut River, although in many places the upper portion of these sediments have been

anthropogenically disturbed during on-site construction activities. Beneath the fluvial sediments are glaciolacustrine sediments, primarily laminated silts and clays, associated with glacial Lake Hitchcock. The basal sediment layer over most of the area is glacial till and stratified drift. Bedrock in the general East Hartford area consists of Triassic Age, interbedded arkoses and basalts. Bedrock in the area has a general slight dip eastward cut by widespread steep faults.

The regional drainage basin is the Upper Connecticut River Basin. Regional flow in the unconsolidated materials in this part of the basin is to the west, towards the Connecticut River. Local groundwater flow is also controlled to some extent by local drainage sub-basins and topography. The upper portion of the unconsolidated sediments serves as the primary aquifer in the area. Groundwater flow in the bedrock is primarily within fractures and fault planes, and to a lesser extent within the rock matrix. The local bedrock aquifer would be adequate as a residential water supply source, but groundwater yields are typically too low to be of commercial or industrial use.

1.5 Soil Boring Locations and Rationale

Soil borings have been installed at the Site over the course of several years as parts of a variety of environmental investigations. Soil borings have been installed both as part of sitewide investigations of soil quality and during investigations of specific environmental units and areas. In many cases, these soil borings were located on the basis of historical information regarding Site operations, or on the basis of field observations made during numerous Site walkovers and visits. Historical operations have been reported in various reports, deduced from aerial photographs, engineering drawings and plans, and reported in various Pratt & Whitney internal memoranda. More details on historical operations are included in the main body of this report as well as in the USTMs.

2. METHODOLOGY

This section presents the methods and techniques used to install the soil borings at the Site. These methods were used by LEA, although some of the general procedures and methods were also used by previous consultants and contractors who installed soil borings.

2.1 General Procedures

Soil borings in the Airport/Klondike Area have been installed by conventional hollow-stem auger drilling rigs and by direct-push techniques using the LEA Geoprobe® drilling rig. Soil borings have been installed at the Site since approximately 1991. This TM describes the general procedures that were used during the installation of soil borings at the Site. Also discussed are variations and exceptions to the general methodology and the reasons why these variations and exceptions were required.

The soil borings installed during the most recent investigation activities were installed in general accordance with the procedures described in LEA Standard Operating Procedures (SOP) *Standard Operating Procedure for Geoprobe® Probing and Sampling*, the LEA SOP *Standard Operating Procedure for Geologic Logging of Unconsolidated Sedimentary Materials*, and the LEA SOP *Standard Operating Procedure for Soil Sampling.*

2.2 Drilling Methods

Two drilling methods were used to install soil borings, both historical soil borings and those installed as part of the current investigation activities, in the Airport/Klondike Areas. The methods used were hollow-stem augering and Geoprobe® direct-push techniques. Each of these methods is briefly described below.

The hollow-stem auger drilling method used continuous-flight hollow stem augers. The typical auger used had an inside diameter of 4.25 inches and a length of 5 feet. A pilot assembly, consisting of a surface-retractable plug for the lead-auger head, was used to avoid filling the augers with formation material. Continuous sampling with a split-spoon sampler was performed in advance of the augers. The split-spoon sampler consisted of a 24-inch long by 1.375-inch inside diameter steel sampling tube. The split-spoon sampler was driven through the 2-foot sampling interval with a 140-pound hammer with a 30-inch drop. After the split-spoon sampler was retrieved, the sampler was transferred to the attending geologist for sampling and logging. Drilling fluids were not required during the installation of soil borings using hollow-stem augers.

The direct-push techniques with the LEA Geoprobe® 5400 were used to install soil borings and both temporary and permanent monitoring wells. Direct-push techniques involved the initial installation of a soil boring to depth using Geoprobe® soil sampling techniques. Boreholes were advanced using the Geoprobe® Macro-Core® soil sampling equipment.

The Macro-Core® system consisted of a 48-inch long by 2-inch outside diameter steel sampling tube outfitted with disposable 46-inch long by 1.75-inch diameter polyethylene terephthalate copolyester (PETG) liners. The soil sampler was outfitted with a new liner and a fitted piston tip. The entire unit was driven to the top of the sampling interval with the Geoprobe® rig. The purpose of the fitted piston tip was to seal the end of the sampling tube against the introduction of formation material during advancement. The piston tip was released by the operator, the sampler was driven to the final sampling depth by a combination of percussive hammering and direct pressure, and the sampler was retrieved. After the sampler was retrieved, the soil-filled liner was removed from the sampler and transferred to the attending geologist for sampling and logging.

2.3 Soil Sampling Methods

Soil samples collected from soil borings were sampled in general accordance with the procedures described in the LEA SOP *Standard Operating Procedure for Soil Sampling*. Continuous soil sampling was performed during the advancement of all boreholes installed at the Site by LEA. Soil sampling procedures were similar for split-spoon samples and for Geoprobe® Macro-Core® samples.

Immediately after collection, the sample liners were sliced open using a dedicated holding frame and razor knife. All soil samples were examined by the attending geologist for indications of contamination, such as the presence of visible free-phase petroleum, visible staining, or the incidental presence of odors. Soil samples were collected directly into laboratory-supplied sample containers with Teflon®-lined lids for submission to an off-site laboratory for possible analysis. In addition, a soil sample was collected directly into a 40-milliliter vial with a Teflon® septum for submittal to the LEA Analytical Laboratory for analysis for target VOCs. After collection, all soil samples were field headspace screened with either a photoionization detector (PID) or flame ionization detector (FID) for the presence of volatile organic compounds (VOCs).

As soon as practical after the collection and opening of the sample liners, the soil samples were collected directly into laboratory-supplied glass sample containers with Teflon®-lined lids for submission to an off-site laboratory for analysis. Soil samples were collected from the opened

liners using pre-cleaned stainless-steel spatulas. Filled sample containers were labeled using pre-printed, pre-numbered adhesive labels with the sampling date and time hand recorded by the sampler. The filled sample containers were placed into iced sample coolers for the remainder of the sampling day.

In addition to each sample collected for the off-site laboratory, a sample was collected for the LEA Analytical Laboratory. A 5-gram aliquot of the soil was collected directly into a 40-milliliter vial with a Teflon® septum for analysis for target VOCs. Prior to collecting the sample, the analytical balance was tared against the weight of the vial. Soil samples were collected directly into the vials and the vials plus the soil were weighed to determine the weight of the soil sample collected. The vials were then filled to 30-milliliters volume with pre-preserved sampling water supplied by the LEA Analytical Laboratory. Filling of the vials was done by placing the vials into a wooden or plastic block, drilled to accept the vial, and sized to provide a top surface level with the 30-milliliter level of the vials. Filled sample vials were labeled using pre-printed, pre-numbered adhesive labels with the sampling date and time hand recorded by the sampler. The filled sample vials were placed into iced sample coolers for the remainder of the sampling day.

2.4 Analytical Parameters

Analytical parameters for soil samples collected from soil borings installed in the Airport/Klondike Area were selected on the basis of historical information regarding area-specific operations. Specific contaminants of concern were chosen based on the chemicals and materials known or suspected to have been used in the area and historical information gathered during previous environmental investigations.

Specific analyses performed on soil samples, and the rationale for selecting specific samples for analysis are discussed in the appropriate USTMs. The analytical parameters selected for all soil samples are presented in Table 1. Table 1 presents information regarding which soil samples were submitted for laboratory analyses and whether any of the target analytes for the analyses selected were detected.

2.5 Quality Assurance/Quality Control Procedures

Several Quality Assurance (QA) samples were collected to confirm the reliability and validity of the field data gathered during the Site investigation. Duplicate samples were used to provide a measurement of the sampling consistency and an estimate of variance and bias. Trip and equipment blanks were used to provide a measurement of cross-contamination sources,

decontamination efficiency, and other potential errors that can be introduced from sources other than the sample.

Trip blanks were used on every sampling day, because samples were routinely analyzed for the presence of volatile organic compounds. Trip blanks were supplied by the analytical laboratory for each cooler/sampling event.

Equipment blanks submitted to off-site analytical laboratories were collected at the rate of approximately one equipment blank for every twenty soil samples submitted for analysis. Equipment blanks submitted to off-site laboratories were collected using laboratory-supplied distilled, de-ionized water using field decontaminated sampling equipment. Equipment blanks submitted to the LEA Analytical Laboratory were collected daily using the laboratory-supplied sampling water.

During the Site investigation, samples were collected for the purpose of defining the presence or absence of contamination. For this reason, the possession of samples, including QA/QC samples, was traceable from the time the samples were collected until they were analyzed. Chain-of-custody procedures were used to maintain and document sample possession from collection through analysis. The following documents identify samples and document possession:

Sample labels
Chain-of-custody record forms
Field notebooks/Field Sampling Records

The field sampler was responsible for the care and custody of the samples collected until they are transferred under the chain-of-custody procedures. Samples collected for analysis at the LEA Analytical Laboratory were maintained under separate chain of custody, and in separate coolers from samples collected for submission to off-site laboratories.

2.6 Borehole Logging

After the retrieved soil was collected for laboratory analysis and field headspace screening, the attending geologist also visually described the soils using a modified Burmister Classification System. The geologic descriptions were recorded on standardized "Geologic Boring Log" forms in general accordance with the LEA SOP *Standard Operating Procedure for Geologic Logging of Unconsolidated Sedimentary Materials.*

The general data recorded for the subsurface materials encountered included the percentage of the sample recovered relative to the length of the sampled interval, the estimated primary grain size ranges according to the Burmister Classification Scheme, secondary grain size ranges, color, relative degree of water saturation, and visible sedimentary structures. In addition, the presence of extraneous materials and foreign objects was also recorded, as was the presence of odors or staining. Copies of available soil boring logs are included in Attachment A to this TM.

Soil borings were typically located in specific environmental units in response to the presence of contaminants . Because of this, and the fact that monitoring wells were typically advanced to greater depths and located site-wide, the development of the geologic model for the Site was based on geologic information derived from monitoring wells logs. Geologic information derived from soil borings was used to supplement the data derived from the monitoring wells. Site geology is discussed in Section 5 of the report.

2.7 Borehole Abandonment

After completion of the sample collection, boreholes were abandoned to prevent the migration of contaminants into the aquifer through the open hole. Boreholes were abandoned by backfilling the open borehole with bentonite granules or small chips. The bentonite was poured slowly into the borehole to avoid bridging. The bentonite was hydrated to induce swelling and seal the borehole.

After backfilling the borehole, a surveyor's flag with the soil boring identifier was placed in the ground to temporarily locate the boring until a civil survey of the location could be completed. Soil boring locations were typically surveyed within two weeks of completion.

2.8 Historical Soil Borings

The majority of historical soil borings installed at the site were completed as part of the installation of the monitoring well network. The advancement and sampling of these borings is presented in TM 1, *Monitoring Well Installation and Development and Soil Sampling.* In general, the shallow borings which were completed as monitoring wells were advanced using hollow-stem auger drilling rigs and sampled using split-spoon techniques. Some of the deeper monitoring well borings were advanced using drive and wash techniques, and sampled using split-spoons. These techniques and methods are discussed in greater detail in TM 1.

2.9 Decontamination of Materials and Equipment

The purpose of consistent decontamination procedures was to prevent the potential spread of contamination between boreholes and samples and from the immediate work area around the borehole. All equipment and materials placed into a borehole, or associated with the collection and sampling of soil from a borehole, were decontaminated prior to initiating the drilling activities and between individual samples, as appropriate. Decontamination procedures are presented in the LEA SOP *Standard Operating Procedure for Hollow Stem Auger Soil Borings*. Drilling rigs and downhole equipment (e.g., hollow-stem augers, bits, etc.) were decontaminated by steam-cleaning prior to initiating any drilling activities at the Site. Steam-cleaning took place at a decontamination pad. The decontamination pad was typically a portable plastic or metal basin of sufficient volume to hold augers and other drilling equipment which could be laid beneath the back end of the drilling rigs to contain the spent decontamination fluids.

Sampling equipment such as split-spoons and stainless steel spatulas were decontaminated between uses in the field at the drilling site or the decontamination pad. Manual decontamination took place at the drilling site using a portable decontamination system, consisting of small, portable trough to contain over-spray and potentially spilt decontamination fluids, and decontamination solutions in individual 5-gallon buckets, or spray containers, as appropriate. The sampling equipment was decontaminated using the following procedure:

- Brush off gross soil particles.
- Wash and scrub equipment with phosphate-free detergent.
- Rinse equipment with deionized water.
- Rinse equipment with dilute nitric acid solution.
- Rinse equipment in deionized water.
- Rinse equipment with dilute methanol/water solution.
- Rinse equipment in deionized water.
- Allow equipment to air dry.

The decontamination water was maintained in 5-gallon buckets during use, and transferred to 55-gallon drums for disposal. LEA field personnel were responsible for preventing cross-contamination between soil samples collected for laboratory analysis. Sample preparation tables were covered with clean, disposable plastic. Clean, disposable plastic was also laid on the ground beneath the sample preparation tables and the decontamination solutions to catch dropped soil and spilt decontamination solutions.

2.10 Soil Boring Location Identifiers

Monitoring wells, as well as piezometers, stream gauges, surface water and sediment sampling locations, and soil borings, have been provided with location identifiers using a systematic method to prevent duplication of location identifiers. The system of location identifiers provides a relatively easy means of finding the referenced locations on site maps. All parts of the P&W East Hartford facilities, including the Andrew Willgoos Gas Turbine Laboratory, the Colt Street facility, and the Main Street facility, have been divided into twenty-nine study areas. Each of the study areas has been assigned two-letter identifiers based upon the common name for the area. These two-letter designations are presented in Table 2.

In addition, each type of sampling location has been assigned a two-letter designation to identify the major sample type for a given sampling location. The two-letter designations for the various types of sampling locations are also presented in Table 2. Because of the large areas involved, the study areas that encompass the Airport/Klondike Area include the North and South Airport Areas and the North and South Klondike Areas. All monitoring and sampling locations have been given a location identifier based on their location in the Airport/Klondike Area, the type of sampling or monitoring location, and finally a sequential numeric identifier based upon the specific type of location. All soil boring locations are presented on Drawings TM5-1 through TM5-4 which cover the entire Airport/Klondike Area.

2.11 Waste Management

All spent decontamination fluids generated during drilling activities for the investigation were placed in 55-gallon closed-top drums supplied by P&W for subsequent off-site disposal by P&W. The drums were labeled, the soil borings contributing to each were listed, and the information tracked to aid in waste characterization and disposal.

All soil cuttings generated during drilling activities were placed in 55-gallon open-top drums supplied by P&W for subsequent off-site disposal by P&W. The drums were labeled, the soil borings contributing to each were listed, and the information tracked to aid in waste characterization and disposal.

2.12 Health and Safety

LEA field personnel conducted field activities in accordance with the LEA Site Health and Safety Plan that was prepared for all of the investigation activities performed at the Site. In general, soil boring advancement was conducted in modified Level D personal protective

equipment (PPE) consisting of safety glasses, surgical or nitrile gloves, steel-toed shoes, and hard hats. Drilling contractors employed as subcontractors operated in accordance with their specific health and safety plans.

3. RESULTS

A total of 725 soil borings have been installed in the Airport/Klondike Area. A total of 58 soil borings were installed in the North Airport Area; 243 soil borings were installed in the North Klondike Area; 165 soil borings were installed in the South Airport Area; and 259 soil borings were installed in the South Klondike Area. The locations of these soil borings are shown on Drawings TM5-1 through TM5-4.

Soil borings were generally completed to a depth of 16 feet below the ground surface, refusal, or the top of the clay unit, depending upon the purpose of the soil boring, the depth to the clay, and the general geologic material in the area. A depth of 16 feet was chosen because it exceeds the depth of 15 feet specified for the direct exposure criteria of the Connecticut Remediation Standard Regulation(RSR). Selected soil borings were completed to shallower depths where the soil borings were installed to provide confirmational samples for previous soil samples, or for other specific sample collection purposes. The general rationale for the location, total depths, analytical parameters, and sampling intervals for the specific soil borings is presented in the appropriate USTMs.

Refusal was not typically encountered in the Airport/Klondike Area. In the Linde Gas Area, refusal was encountered for borings installed through the concrete slab of the former chemical storage building. In this area it is presumed that refusal was due to the backfill material associated with the construction of the chemical storage building and not to natural conditions of the site.

The clay layer underlying the site provides an effective barrier to vertical contaminant migration, and as such, soil borings were not typically continued when the clay unit was encountered.

Table 1 summarizes the analytical parameters applicable to specific soil samples collected from soil borings at the Site. Specific analytical results and the rationale for soil boring locations and sample selection are discussed in the appropriate USTMs. The soil borings associated with specific environmental units is presented in Table 3.

Geologic boring logs for soil borings are presented in Attachment A. In general, geologic data derived from soil borings was used to supplement the geologic data derived from the monitoring wells. Monitoring wells were used as the major source of information for describing the surficial geology of the Site. Site-specific geology is discussed in Section 5 of the report.

REFERENCES

Haley & Aldrich, Inc., January, 1993, *Site-Wide Environmental Monitoring Report, Pratt & Whitney, East Hartford, Connecticut*, prepared for Pratt & Whitney.

Metcalf & Eddy, Inc. July 1993, *Draft Report - Klondike Area Site Investigation, UTC / Pratt & Whitney Facility, East Hartford, CT,* prepared for Pratt & Whitney.

Westinghouse Environmental and Geotechnical Services, Inc. November 1990, *Current Assessment Summary Report*, Pratt & Whitney, East Hartford, Connecticut, unpublished report for Pratt & Whitney.

Westinghouse Environmental and Geotechnical Services, Inc. 1990, *Preliminary Reconnaissance Survey of the Klondike Area*, Pratt & Whitney, East Hartford, Connecticut, unpublished report for Pratt & Whitney.

TABLES

Table 2 Area and Sampling Type Identifiers Airport/Klondike Areas, Pratt & Whitney, East Hartford, Connecticut			
Area Designation	**Area**	**Sampling Type Identifier**	**Explanation**
AB	Within A Building	MW	Monitoring Well
BB	Within B Building	PZ	Piezometer
CB	Within C Building	SW	Surface Water
DB	Within D Building	SD	Sediment
EB	Within E Building	CC	Concrete Chip
FB	Within F Building	SS	Surface Soil
GB	Within G Building	SB	Soil Boring
HB	Within H Building		
JB	Within J Building		
KB	Within K Building		
LB	Within L Building		
MB	Within M Building		
CS	Colt Street Facility		
EA	Engineering Area		
ET	Experimental Test Airport Laboratory		
LM	Area Outside Buildings L and M		
NA	North Airport Area		
NT	North Test Area		
NW	North Willgoos Area		
PH	Powerhouse Area		
SA	South Airport Area		
SK	South Klondike Area		
ST	South Test Area		
SW	South Willgoos Area		
WT	Waste Treatment Area		
XT	Experimental Test Area		

DRAWINGS

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Description of Oversized Material, if applicable:

DRAWING TM4-1: AIRPORT/KLONDIKE AREA BACKGROUND SOIL INVESTIGATIONS - SOIL TYPE DISTRIBUTION

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Description of Oversized Material, if applicable:

DRAWING TM4-2: AIRPORT/KLONDIKE AREA BACKGROUND SOIL INVESTIGATIONS - LOCATION & CONSTITUENTS DETECTED MAP

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Description of Oversized Material, if applicable:

DRAWING TM4-3: AIRPORT/KLONDIKE AREA GLACIOLACUSTRINE SEDIMENT SAMPLE LOCATIONS - LOCATION & CONSTITUENTS DETECTED MAP

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